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DIRECTORATE OF
HEALTH CARE STUDIES
AND CLINICAL INVESTIGATION

AMBULATORY PATIENT GROUPS
An Evaluation for Military Health Care Use

HR 93-004

November 1993

"TO CONSERVE FIGHTING STRENGTH"

UNITED STATES ARMY
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AMBULATORY CARE EVALUATION STUDY (ACES)

The Evaluation of Ambulatory Classification Systems Series

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REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1a. REPORT SECURITY CLASSIFICATION Unclassified	1b. RESTRICTIVE MARKINGS
2a. SECURITY CLASSIFICATION AUTHORITY	3. DISTRIBUTION/AVAILABILITY OF REPORT Distribution unlimited; Available for Public use.
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE	
4. PERFORMING ORGANIZATION REPORT NUMBER(S) HR 93-004	5. MONITORING ORGANIZATION REPORT NUMBER(S)
6a. NAME OF PERFORMING ORGANIZATION U.S. Army, Directorate of Health Care Studies & Clinical Invest. 6b. OFFICE SYMBOL (If applicable) HSHN-H	7a. NAME OF MONITORING ORGANIZATION
6c. ADDRESS (City, State, and ZIP Code) Bldg 2268 Fort Sam Houston, TX 78234-6100	7b. ADDRESS (City, State, and ZIP Code)
8a. NAME OF FUNDING/SPONSORING ORGANIZATION 8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER
8c. ADDRESS (City, State, and ZIP Code)	10. SOURCE OF FUNDING NUMBERS PROGRAM ELEMENT NO. / PROJECT NO. / TASK NO. / WORK UNIT ACCESSION NO.

11. TITLE (Include Security Classification) (U) Ambulatory Patient Groups: An Evaluation for Military Health Care Use.

12. PERSONAL AUTHOR(S) LTC James M. Georgoulakis, MAJ Juliana Ellis-Billingsley, David R. Bolling, LTC. Atanacio C. Guillen, Nancy Willcockson

13a. TYPE OF REPORT	13b. TIME COVERED	14. DATE OF REPORT (Year, Month, Day)	15. PAGE COUNT
Final	FROM _____ TO _____	1993	

16. SUPPLEMENTARY NOTATION

17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
FIELD	GROUP	SUB-GROUP	Ambulatory care, Ambulatory Patient Groups, Military Medicine

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

(U) In response to a Congressional mandate directing the Department of Defense to allocate resources based on a diagnosis related groups type system, a team of researchers from the U.S. Army Medical Department Center and School, Directorate of Health Care Studies and Clinical Investigation evaluated the APGs developed by 3M-Health Information System. The APGs are a visit-based ambulatory classification system designed to group clinically similar visits for the purpose of reimbursement.

The data base used for the evaluation consisted of a sample fo data (516,006 visits) derived from the Army's Ambulatory Care Data Base (ACDB) study. The ACDB contains over 3.1 million patient visits recorded from six Army Medical Treatment Facilities (MTFs). The MTFs were selected for their diverse missions and populations constituting a representative sample of Army Medical Department health care.

The major criteria employed to evaluate the APGs included: (a) clinical meaningfulness (i.e., from a clinical perspective did the groups make sense), (b) administrative

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT	21. ABSTRACT SECURITY CLASSIFICATION
☒ UNCLASSIFIED/UNLIMITED ☒ SAME AS RPT. ☐ DTIC USERS	Unclassified
22a. NAME OF RESPONSIBLE INDIVIDUAL LTC James M. Georgoulakis	22b. TELEPHONE (Include Area Code) (210) 221-0278 22c. OFFICE SYMBOL HSHN-H

DD Form 1473, JUN 86 *Previous editions are obsolete.* SECURITY CLASSIFICATION OF THIS PAGE
Unclassified

DD1473 Report Documentation Page (cont'd):

19. ABSTRACT:

ease of implementation; (c) statistical analysis of the grouper results (i.e., are the number of groups appropriate); (d) how effective was the system as a resource allocator (i.e., how accurately does the grouper account for resource consumption); and (e) military applicability (i.e., can this system be utilized in an extensive and diverse military environment).

Results indicate that in general, the APG algorithims appear clinically meaningful with a number of exceptions. Examples of exceptions include Occupation and Physical Therapy visits placed in one APG category and the APG category for mental diseases is confusing.

ACKNOWLEDGMENTS

The evaluation of the Ambulatory Patient Groups (APGs) required the contributions of a number of individuals. It would be impossible to acknowledge all the military and civilian employees who have contributed to this successful project. Without their assistance the APGs could not have been evaluated in a military health care environment.

The present Director of Health Care Studies and Clinical Investigation, Colonel William B. York, Jr., M.D., the former Commander of HCSCIA, Colonel David A. McFarling, M.D., and the former Deputy Commander, Colonel Gregory C. Meyer, have provided support and have maintained a keen interest in the APGs. The Chief of the Health Care Studies Division, Colonel Norris F. Jesse, has not only been instrumental in project coordination, but has been the "best Boss" anyone could work for. His willingness to assist in any way possible was crucial to the successful completion of the study. We wish to thank our research assistant, Michelle Lee, who kept us on track and always found the energy and enthusiasm to help. In addition, appreciation is extended to Ms. Rhonda Barrett of the CDSI Corporation for typing, retyping, and assisting in the design of the report. Special thanks is given to Ms. Beverly Rakowitz, the HCSCIA technical information specialist, who proofread and provided numerous recommendations to improve the report. A special acknowledgment of deepest gratitude is extended to Elena Selles of the CDSI Corporation, not only for her programming support and assistance, but especially for her patience in working with a "difficult" study director.

A great deal of appreciation and gratitude is owed to Dr. Mark Wynn, Hospital Reimbursement Methodology Branch Chief, Office of Research and Demonstrations, Health Care Financing Administration, for his continued encouragement, support, and interest in this evaluation. The authors would also like to acknowledge the assistance of Mr. Joseph Crammer and Dr. Mel Inger, Hospital Reimbursement Methodology Branch, Office of Research and Demonstrations, Health Care Financing Administration. Gratitude is extended to Mr. Richard F. Averill, principal investigator in the development of the APGs, and Dr. Norbert I. Goldfield, medical director of the APG project, for their assistance in this endeavor. A final word of thanks to Margaret B. Sulvetta, senior researcher at the Urban Institute, for her assistance and support in our evaluation.

EXECUTIVE SUMMARY

The purpose of this study was to evaluate the Ambulatory Patient Groups (APGs) for military implementation. The APGs are a visit-based ambulatory medical care classification system designed to group clinically similar visits for the purpose of reimbursement.

In response to a Congressional mandate directing the Department of Defense to allocate medical and financial resources based on a diagnosis related groups type system, a team of researchers from the U.S. Army Health Services Command, Health Care Studies and Clinical Investigation Activity evaluated the APGs, developed by 3M-Health Information Systems (Averill et. al, 1991). The study team also evaluated other major ambulatory classification systems, to include the Products of Ambulatory Care (PACs), developed by the New York State Health Department (Tenan et al., 1988); the Ambulatory Visit Groups (AVGs), formulated by a group at Yale University (Fetter, Averill, Lichtenstein, & Freeman 1984); the Products of Ambulatory Surgery (PAS), created by the New York State Department of Health (Fillmore, 1991); the Emergency Department Groups (EDGs) classification system, developed by Health Systems Research, Inc., 1990; and the Ambulatory Care Groups (ACGs), created at Johns Hopkins University (Weiner, Starfield, Steinwachs, & Mumford, 1991).

The data base used for all evaluations consisted of a sample of data derived from the Army's Ambulatory Care Data Base (ACDB) study (Georgoulakis et al., 1988). The ACDB study was conducted over a 21-month period (January 1986 to September 1987) during which over 3.1 million patient visits were recorded from six Army Medical facilities. These visits represented care provided by more than 4,000 health care providers representing 50 clinical specialties.

The six Army Medical treatment facilities (MTFs) selected for the study had diverse missions and their populations constituted a representative sample of Army Medical Department health care. The six sites were Brooke Army Medical Center, Fort Sam Houston, Texas; Womack Army Medical Center, Fort Bragg, North Carolina; Moncrief Army Community Hospital, Fort Jackson, South Carolina; Bayne-Jones Army Community Hospital, Fort Polk, Louisiana; Blanchfield Army Community Hospital, Fort Campbell, Kentucky; and Fox Army Community Hospital, Redstone Arsenal, Alabama.

The sample used in this evaluation study contained 516,006 clinic visits. These visits were randomly selected from a cleaned data set of over a million visits. The total uncleaned data base, as previously noted, contained 3.1 million patient visits.

Preparation for the evaluation included recoding and mapping some of the diagnosis and procedure codes into the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM), the CPT: Physicians' Current Procedural Terminology, Fourth Edition (CPT-4) codes, and the Physicians' Current Procedural Terminology (1990) codes.

Since the military does not have a per visit cost accounting system, the study team developed several different costing methodologies for testing the classification system. The four costing methodologies were applied to the APGs to permit analyses on the effectiveness of the grouper as a resource allocation system. A General Linear Model (GLM) statistical procedure contained in the Statistical Analysis System (SAS®) was employed to measure the system's effectiveness with the cost methodologies.

In general, the study team found that the effectiveness of the APG classification system was directly related to the methodology used to attach a cost to each visit. The results of the GLM using the APG grouper with the four cost formulas showed the grouper to be most effective for the Medical APGs when using .16% of the variance, and least effective when using the combination of actual and estimated military costs (.09% of the variance). The Civilian Health and Medical Benefits Program of the Uniformed Services (CHAMPUS) cost formula was also most effective with the Significant Procedure APGs, especially when using the logarithmic cost (.46% of the variance).

This is of particular importance to the present study as the military, unlike the civilian community, is not fully capable of producing a "bill" or itemized list of costs for services provided during a visit. Until the military is able to produce such a "bill," efforts toward direct comparison with the civilian community for specific medical services are somewhat difficult.

An additional concern to the study team was the exclusion of nonphysician health care providers in the APG algorithm. APGs are based on CPT and expanded HCFA Common Procedure Coding System (HCPCS) codes. These codes have been developed primarily for physician services. This is of concern in the military where an extensive network of nonphysician providers exists. Any classification system intended for military use should have provisions for nonphysician health care providers. This provision could be made through the use of expanded CPT-4 codes, modification and utilization of HCPCS codes, or the development of a system of military procedure codes which could be adapted to the APG algorithm.

Some of the innovations advanced by the APG system are more theoretical than practical. For example, the concepts of

bundling, consolidation and discounting are compelling for purposes of cost containment. However, research to support these concepts is lacking. Moreover, some of these concepts are not appropriate for the military health care environment.

One of the obstacles to the implementation of the APGs in a military environment results from the absence of inflated charges/profits which could absorb revenues lost as a result of the consolidation techniques. Facilities would be financially penalized for providing more than one procedure per visit. Military health care providers do not profit from the number or types of procedures they perform. The decision to perform a procedure is based on the clinical indications and need. The APGs would severely penalize military facilities that attempt to maximize the services rendered to a patient per visit. This may create an incentive to schedule procedures on different dates so that the facility would be maximally resourced for services rendered. This would neither be in the best interest of the patient nor improve the system.

The results of the study provide a greater understanding of the ambulatory classification system most likely to be selected for implementation by the Health Care Financing Administration. The use of a large data set which covered the spectrum of military-based hospital outpatient services provided valuable insights into the complexities of implementing the system in a military environment.

At the present time, while in their current form, neither the APGs nor any of the other classification systems reviewed, meet the needs of the military for the allocation of resources.

At this juncture, it appears that if the military is to comply with the Congressional mandate by 1 October 1995, much work needs to be undertaken. The Secretary of Defense needs to establish regulations using outpatient DRGs as the primary criteria for allocation of resources for DOD Medical Treatment Facilities (MTFs). Specifically, the following must be accomplished:

1. A financially sound cost methodology must be developed. This methodology must account for as many of the factors related to the provision of health care as possible.
2. The Department of Defense must realize that it will not be possible to take "off the shelf" the APGs or another ambulatory classification system and implement it throughout the medical system without major modifications.
3. Because the APGs focus on physician services, it would be prudent for the military to initiate, as soon as possible, the modification of the APG system to include services provided by nonphysician health care providers.

4. Prior to implementation in either the civilian or military community, the APGs will require modification in the clinical structure of some of the groups. Additional modifications are called for in the software. Finally, the concepts of bundling, consolidation, and discounting require further research before implementation.

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INTRODUCTION

In the 1986 Omnibus Budget Reconciliation Act (OBRA), Congress directed the Health Care Financing Administration (HCFA) to develop an outpatient prospective payment system (PPS) for the facility component of Medicare. This directive was based on the success of Medicare's inpatient facility PPS in controlling Medicare expenditures. Following this mandate, HCFA issued grants to various organizations to develop a PPS for the facility component of ambulatory care. Based on this directive, Congress, in the National Defense Appropriation Act of 1987 (NDA 1987, P.L. 99-661. Sec. 701, USC 1101) directed the Department of Defense (DOD), to revise the method of allocating resources within the military health care system. The act specified that DOD implement a Diagnosis Related Groups (DRGs) type system to allocate resources to its medical treatment facilities (MTFs). The system for inpatient care was scheduled for implementation on 1 October 1987, but was not implemented until 1 October 1988. The system for outpatient facility resource allocation was initially scheduled for implementation on 1 October 1988. However, recognizing the challenges in developing an ambulatory classification system, Congress, in subsequent National Defense Authorization Acts for fiscal years 1989-1991, extended the deadline for the implementation of an outpatient system until 1 October 1995. At the time of this report, August 1993, Congress had not selected an outpatient PPS.

Purpose of the Study

To assist the DOD in meeting the objectives of the Congressional mandate and to study the potential impact of a new method of allocating resources, the U.S. Army Medical Department initiated the Ambulatory Classification Evaluation Study (ACES). The purpose of the study was to review the available ambulatory classification systems for possible implementation by the military. The ACES team utilized military data that was collected from the Army Surgeon General's Ambulatory Care Data Base (ACDB) study (Georgoulakis et al., 1988).

Organization of the Report

This report describes the evaluation of the Ambulatory Patient Groups (APGs), version 1.0, developed by 3M Health Information Systems (3M-HIS), for military implementation. APGs are the ambulatory reimbursement classification system that will most likely be recommended to Congress by the HCFA. (Personal communication with Dr. Mark Wynn, Branch Chief, Hospital Reimbursement Branch, Office of Research and Demonstrations, HCFA, 21 January 1993.) This APG report provides a historical review of the development of ambulatory reimbursement classification systems, contains a synopses of the complete systems currently available, and describes the development of the APGs. The report outlines the methodology of the current study, including how the data was collected, reliability of the data,

diagnosis and procedural code remapping, and development of cost methodologies. Results of the APG study using military cost data are covered in the report, as well as the application of the APGs to a military environment. The report also includes an outline of the study team's recommendations to the Army Surgeon General and discussion of those areas wherein additional research is necessary.

REVIEW OF THE LITERATURE

Introduction

The issue of containing costs of providing health care has become the challenge of the 1990's for America. This challenge is shared by government at all levels, by industry, and by individuals, particularly the estimated 37 million Americans who are not covered by any type of medical plan. Costs for health care in America are staggering. More than $800 billion were spent on health care in 1992, and the office of National Health Statistics reported that health care spending represented 13.4% of the Gross National Product (GNP) for that year. Present projections indicate that by the year 2000, if health care costs are not contained, they will account for 16.4% of the GNP.

Unfortunately, many analysts feel this projection may be too low. It is known that the city of Boston was spending the equivalent of 16% of local GNP on health care during the 1980s. These costs have propelled the United States health care system to become the world's seventh largest economy. The business share of the bill was $173 billion in 1989, a sum equal to 100% of their net profits. How can the richest country in the world stay competitive when health care consumes 50% more of the national output than its rivals. (Smith, 1991).

Based on the rising cost of health care, it is not surprising that government, business, insurers, and individuals are willing to coordinate efforts to reduce health care costs. What is surprising is that efforts to develop systems for containment of health care costs have not always been well-received. Less than a decade ago, when Fetter's group (Fetter et al., 1980a) first defined the products of health care in terms of DRGs, hospital administrators and clinicians were outraged. Today, less than 10 years after Medicare implemented DRGs, many of those same administrators and clinicians believe that this system provides appropriate cost control incentives.

DRGs have been credited with controlling the growth in Medicare expenditures for inpatient care. Medicare expenditures for inpatient care in 1990 were 18 billion dollars less than had been estimated in the early 1980s (Averill et al., 1991). As a result of this success, Congress, in the Omnibus Budget Reconciliation Act (OBRA) of 1986, directed the HCFA to develop a PPS

for outpatient medical care. The goal of a PPS on the federal level is to slow the spiraling cost of health care. This task is difficult and is compounded by the aging demographics of the population. As the "baby boomers" (people born between 1946 and 1964) grow older, the aged population is expected to expand rapidly. It is estimated that there are 76 million "baby boomers" heading towards old age (Santelli, 1993). Additionally, between 1997 and 2010, the portion of the aged population that will be over 85 years of age will double (Greenberg, 1993). The medical expenses for these citizens are 2.5 times higher than the cost of caring for individuals 65-69 years old (Johnson, 1991). By the year 2010, the government's expenditure in Medicare is expected to increase by nearly "2% of the GNP" which is estimated to be equal to a $120 billion tax increase in today's dollars (Figge, 1990).

The DOD, with more than 8.2 million beneficiaries and a Health Care budget of $15.5 billion (Frederick, 1993) has not been immune to the escalating cost of health care. In response to rapidly escalating military health care costs, Congress, in the 1987 National Defense Authorization Act directed DOD to use a DRG type system to allocate resources to its MTFs. The system was to be implemented 1 October 1987 for inpatient care and 1 October 1988 for outpatient care. However, because there was no national outpatient system in October of 1989, Congress, in ensuing acts, extended the DOD outpatient care system deadline until 1 October 1995.

Purpose of an Ambulatory Classification System

The purpose of an outpatient PPS is to provide payers of health care, most notably Medicare, with a means of understanding and potentially controlling the growth of outpatient hospital expenditures. This is particularly relevant in today's health care environment given the dramatic increase in hospital based outpatient care experienced in the 1980s. The number of outpatient hospital visits increased by almost 50% during the period of 1980 to 1990, and the number of outpatient visits in 1990 alone exceeded 300 million (Lane, 1992). Additionally, it has been projected that the percentage of net hospital revenues from outpatient care will increase to 36% in 1993 and will represent nearly half (49%) of all hospital net revenues by the year 2000 (Lane, 1992). This growth in outpatient care can be attributed to a number of factors: (a) advances in technology; (b) the policies of third party payers; (c) the Medicare payment system which requires preadmission review for necessity and appropriateness of admission (utilization and review policies); (d) the inflationary Medicare physician payment policy of allowed charges based on customary, reasonable, and prevailing rates; and (e) the implementation of the DRGs for inpatient care.

The ultimate goal of an outpatient PPS is to control costs in an equitable manner. It is assumed that a prospective price can be established for each type of patient visit which will include all routine services (e.g., blood test, chest x-ray, etc.) typically associated with an outpatient visit.

To implement an outpatient PPS, it is necessary to develop an outpatient classification system. An outpatient PPS will serve the same function as the DRGs serve in the inpatient setting. An ambulatory PPS meeting the following criteria will provide incentives to control the amount of services rendered:

1. The ambulatory classification system must be comprehensive. The system must be able to account for every type of service provided in an outpatient setting. Concurrently, the system must have the flexibility to integrate changes in technology.
2. A requirement is administrative simplicity. Given the volume of outpatient visits, the system must be easy to implement and maintain.
3. Data requirements must be held to a minimum and must be compatible with existing billing, coding, storage, and processing practices.
4. Use of homogeneous resources is necessary. The amount and kinds of resources (e.g., operating room time, medical surgical supplies, etc.) used to treat patients within each patient class payment group should require like amounts of resources.
5. Each of the patient groups must have clinical meaningfulness. In general, health care providers are more supportive of PPSs that are clinically sound.
6. The PPS must have a minimal potential for "up coding." Stated another way, a system that provides minimal opportunity for providers to assign a patient to a higher paying group is most desirable (Averill et al., 1991).
7. Although one could add additional requirements for inclusion in the development of an ambulatory classification system for prospective payment, these mentioned here represent the foundation of a system envisioned by the HCFA.

Major Ambulatory Classification Systems

The history of the federal government's effort to develop an ambulatory classification systems traces its origin to the work at Yale University in the late 1970s. With a contract from the Social Security Administration, the first public version of an ambulatory classification system (Ambulatory Patient Related Groups) was released in 1980 (Fetter, 1980a). The release of Fetter's effort proved to be a catalyst in the development of ambulatory reimbursement classification systems. For the purpose of this review, only those systems that contain the prerequisites necessary for implementation (i.e., system documentation, availability of computer software, universal applicability to

ambulatory care, system flexibility, and a mechanism for resource allocation) are included in this discussion.

Ambulatory Visit Groups

The development of the Ambulatory Visit Groups (AVGs) was based on Fetter's prior effort at Yale (Fetter, 1984), developing the Ambulatory Patient Related Groups. As a result of this work, in 1983, HCFA provided funds to improve and update the initial Yale effort (Schneider et al., 1986). The development of AVGs by the Health Systems Management Group at Yale provided the first opportunity to examine ambulatory productivity and resource consumption. The initial AVGs consisted of 154 groups. Subsequent revisions of the AVGs included modifications in the number of groups and system methodology (Fetter, 1980b; Fetter et al., 1984). The present generation of AVGs was proposed as a visit-based model for reimbursement and has 570 groups (Fetter et al., 1988). The groups represent visits that require similar types and amounts of resource consumption. Visits to all specialty providers were included in the AVG algorithm with the exception of pathologists, anesthesiologists, and radiologists (Georgoulakis et al., 1990).

It should be noted that the AVGs are methodologically similar to the DRGs, which is not surprising since both systems were created at Yale University. DRGs are designed for inpatient hospital stays, while AVGs, complimentary to DRGs, are designed for group visits which occur in an outpatient setting. The developers envisioned linkage of these systems by patient identification codes, so as to provide a better and complete picture of the entire health care regimen provided to a patient. This is useful to researchers, providers, and policy makers for examining inpatient and ambulatory care in combination. Together, DRGs and AVGs provide the building blocks needed for the eventual development of "episodes of care" for specific conditions, instead of viewing medical care from the aspect of single visits.

The AVG algorithm first separates visits into 23 major ambulatory diagnostic categories (MADCs) based on ICD-9-CM diagnosis codes, which generally correspond to organ and body systems (Schneider et al., 1986). These MADCs are further divided into medical and procedural categories. If a "significant procedure" is performed, as defined by the developers, the visit goes into an AVG for similar types of procedures. If a significant procedure is not performed, then the AVG visit falls into a Medical AVG containing diagnoses with similar features. Each Medical AVG is then further categorized based on whether the patient met the criteria for "old" versus "new" patient status.

The AVGs data requirements, important considerations in selecting a classification system, are limited to those data elements normally collected in an outpatient visit with one exception (old versus new patient status/classification). The data elements include age, gender, patient disposition, ICD-9-CM primary diagnosis, and procedures performed as defined in CPT: Physician's Current Procedural Terminology (CPT4).

In evaluating the AVGs from a clinical and resource perspective, Lion (1984) used "first generation" AVGs to compare cost and time differences between general practitioners and specialty physicians in private practice and hospital outpatient departments, utilizing the University of Southern California Mendenhall data set. Unlike the National Ambulatory Care Survey (NAMCS) data set, this set included physicians in hospital outpatient departments (OPDs), where care is similar to that provided in the military setting. Results showed that general practitioners and physicians in private practice would derive more benefits from an AVG resource allocation system than would specialty physicians and those practicing in hospital outpatient departments.

The AVGs were evaluated for military feasibility as a method for allocating medical resources (Georgoulakis et al., 1990). Using data from the Army Medical Department's Ambulatory Care Data Base (ACDB) study (Georgoulakis et al., 1988), it was found that the number of AVG groups was excessive, the distinction of old versus new patient was extremely difficult to differentiate, and the amount of variance (cost) accounted for in a visit varied depending on the cost methodology utilized. In addition, prior to implementation in the military, a number of modifications to the grouping algorithm will be required and additional groups developed to account for military specific procedures (e.g., various types of flight physical).

Products of Ambulatory Care

The Products of Ambulatory Care (PAC) is a classification system designed for reimbursing hospital clinics and community health centers for patient visits. The PAC was developed by the New York State Department of Health (Tenan, 1988) under a grant from HCFA. PAC is based on the concept of bundling together the medical services typically consumed by well-defined groups of patients. The medical services provided to these patients include the professional service (labor) and ancillary service costs related to a specific visit. These service bundles are the case-mix sensitive part of the PAC price. The second part of the PAC price is composed of a facility specific cost component (Georgoulakis et al., 1990).

The PAC was developed using a stratified random sample of 10,000 outpatient visits from Bronx County and from New York

State's Northeast region. Most types of outpatient care were collected in this sample, with the exception of dental services, ambulatory surgery, emergency department care, and renal dialysis. Only a minimal amount of selected mental health visits were obtained, reflecting services such as discharge planning and drug and alcohol counseling. Following a process of editing and reviewing the data by clinical advisory groups, an expense methodology was developed to account for labor costs, ancillary costs, and facility costs. Utilizing the Statistical Analysis System (SAS) in conjunction with AUTOGROUP (a software program for grouping medical data), in an iterative process with review by clinical advisory groups, patterns of relationships among services and procedures were established. Finally, based on the intersection of patient characteristics (e.g., age, gender) and service (e.g., diagnosis or management), 24 mutually exclusive PAC groups were established.

In 1987, PAC was implemented as a Medicaid PPS for the state of New York. In 1990, the PAC was expanded to include the Products of Ambulatory Surgery (PAS). The PAS consists of 42 surgical groups. Unlike the PAC, which groups visits using a combination of gender, age, procedure(s), and diagnosis(ses), the PAS formed groups based solely on procedure(s) contained in the CPT: Physicians' Current Procedural Terminology. If a visit contains a specific procedure, that visit was grouped into the PAS containing that and other like procedures.

In an effort to provide a more equitable payment structure and to increase the clinical homogeneity within groups, the PAC was modified and expanded to 72 groups in 1992. At the present time, the PAC and PAS systems consist of 114 total groups, encompassing both medical and surgical visits.

In 1990, the first generation PAC was evaluated for possible military (Army) implementation by a study team of Army Medical Department researchers (Georgoulakis et al., 1990), employing the following criteria: (a) clinical meaningfulness (i.e., from a clinical perspective did the groups make sense), (b) administrative ease of implementation, (c) statistical analysis of the grouper results (i.e., how accurately does the grouper account for resource consumption), and (d) military applicability (i.e., can this system be utilized in an extensive and diverse military environment). The major findings of the evaluation included the following: (a) PAC groups were developed using sound medical logic; (b) the groups were too broad in scope; (c) the computer requirements (installation and operation) were relatively minimal; (d) data requirements necessary for the grouping program are obtainable; (e) the amount of variance accounted for by the grouper varied by cost formula utilized; (f) from an administrative perspective the system could be implemented by the military, but presents a high potential for "gaming" (i.e., upcoding to receive additional resources); and

(g) additional groups would be necessary for military implementation.

The addition of the PAS to the PAC system required an additional military evaluation study. This second study (Georgoulakis et al., 1992) utilized the same criteria as the earlier study, and not surprisingly, yielded the same findings, with the exception of improved clinical meaningfulness of the system. The expanded 114-group PAS/PAC system of 1992 was not available for evaluation at the time of this report.

Diagnosis Clusters

Diagnosis Clusters were initially developed at the University of Washington, in 1980, (Schneeweiss, Rosenblatt, Cherkin, Kirkwood, & Hart, 1983) as a tool to analyze and describe ambulatory data. The Diagnosis Clusters were principally envisioned as a management tool and not as a reimbursement system (Smithline & Arbitman, 1988). Diagnosis Clusters are an episode-based system that initially contained 92 clusters of diagnoses. In a 1983 revision, the number of clusters was increased to 100. The clusters, based on ICD-9-CM codes, use principal diagnosis as the basis for classification, and were developed using data from the NAMCS. Generally speaking, the 100 clusters can be grouped into four broad patient categories: acute diseases, chronic diseases, depression/anxiety/neuroses, and general medical examination. The purpose of the clusters was to bring together "conditions with similar pathophysiologic characteristics or related clinical presentations that call for similar clinical responses on the part of the physicians" .

The Diagnosis Clusters purported to represent nearly 59% of all ambulatory office visits in the United States. While this is extremely impressive, the system would require a major expansion in terms of services covered to be adapted for use as an ambulatory classification system for reimbursement. No additional refinements have been published for the Diagnosis Clusters system since 1988.

Ambulatory Surgery Centers

The accounting of resources used in surgical procedures is a recent addition to the development of ambulatory reimbursement systems (e.g., PAS). The HCFA has developed a classification system containing 8 major categories which cover the 1535 surgical procedures performed in the ambulatory surgery centers (ASCs). The major categories of the ASC were formed solely on the basis of the average relative charge allowed for each procedure. Additionally, the categories are not clinically meaningful, nor do they address medical patients, ancillary services, or other ambulatory services.

Emergency Department Groups

The Emergency Department Groups (EDGs) system was initially funded by HCFA and developed under the direction of Dr. James Cameron at UCLA, and completed by Health Systems Research, Inc. (HSR, Inc., 1991). The initial HCFA focus was limited to the Emergency Department (ED). However, Cameron (personal communication, July 1990) stated that the EDGs have the potential for serving as the framework for case-based reimbursement for all components of hospital-based ambulatory care.

The EDGs are a visit-based ambulatory classification system designed to group clinically similar visits that utilize like amounts of resources. The EDGs were developed using a sample of 19,739 visits collected from EDs of three large urban hospitals in the Los Angeles area. From these hospitals three types of data were collected: (a) demographic data (from the patients' medical records), (b) utilization of physician and hospital services for each ED visit (extracted from patient billing data), and (c) provider time (collected specifically for the study). These data were then employed in a step-wise partitioning process using a cluster analysis technique (AUTOGROUP interactive statistical system) to partition sets of observations into logical subgroups. Criteria used to guide the clustering process included: (a) priority was given to medical judgement over statistical considerations so that medically sound groups would be developed; (b) variables relating to the medical condition of the patient were employed; (c) the number of required variables was minimized; (d) the order preference in partitioning was fixed, employing the same methodology with respect to the variables entering the decision process; (e) statistical difference (the goal was to develop groups that were different in terms of cost); and (f) coefficiency of variation (terminal groups were to have coefficients of variation less than 1.0) (HSR, Inc., 1990).

This process resulted in the creation of eight Major Diagnostic Categories (MDCs) plus a ninth category for patient visits that could not logically be grouped with the other eight (e.g., follow-up visits, administrative visits, etc.). Each of these groups was then partitioned into three subgroups based on discharge disposition: (a) home/other non-acute, (b) transfer-acute (patient was transferred to another acute care hospital), and (c) admit patient to hospital. After the nine MDCs were partitioned into the three disposition subgroups, they were further partitioned using a systematic decision process (HSR, Inc., 1990). The partitioning process resulted in the formation of 216 EDGs that are mutually exclusive and exhaustive. Each patient visit, based on the grouper variables, is assigned to a single EDG. Utilizing a cost methodology developed by Cameron, and after trimming the data for outliers at three standard

deviations (3 SD) from the group means, the amount of variance accounted for by the EDGs was .63.

A military study team evaluated the EDGs for possible military implementation and indicated a number of significant findings (Georgoulakis, Ellis-Billingsley, Guillen, & Bolling, 1992). Most prominent among these findings were: (a) the partitioning of the groups (EDGs) was based on sound medical logic, (b) the grouping algorithm is complex and includes extraneous variables, (c) the number and type of required variables are not readily available in existing billing and coding practices, and (d) the use of various military cost methodologies developed by the study group failed to account for similar amounts of variance (e.g., .63 versus .22).

Ambulatory Care Groups

At the Johns Hopkins University, Weiner, Starfield, Steinwachs, and Mumford (1990) developed the Ambulatory Care Groups (ACGs). Their development of the ACGs was aided by a grant from the Agency for Health Care Policy and Research (AHCPR). The ACGs represent a departure from traditional approaches to ambulatory classification systems in that they were developed to project consumption of health care resources for various populations, rather than on a per patient/visit basis. This approach is an attempt to improve the predictability in setting rates for capitation.

AMBULATORY PATIENT GROUPS

Introduction

HCFA provided a series of grants to 3M-HIS to develop a PPS for the facility component of outpatient care.

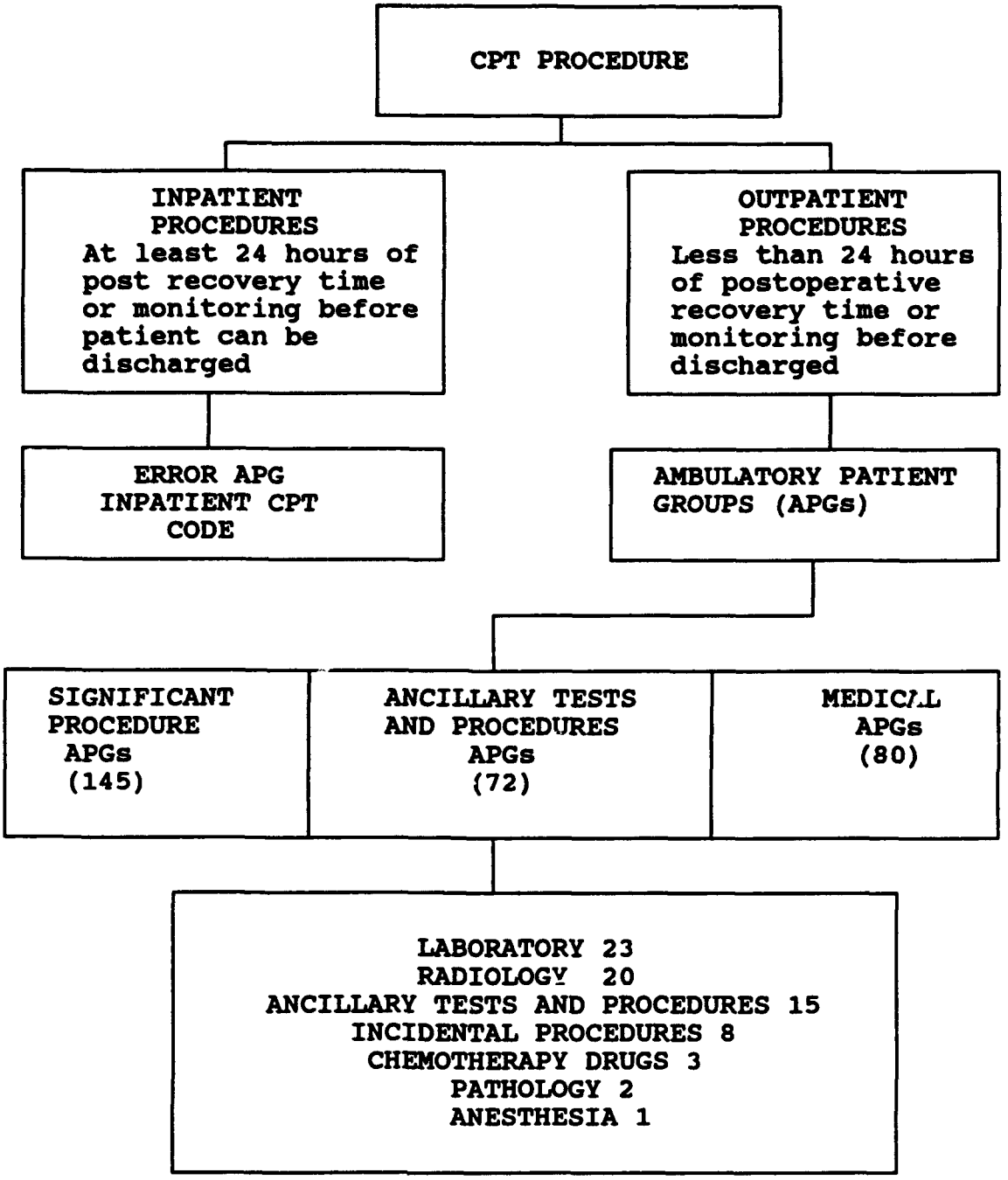
The APGs are a visit-based patient classification system designed to explain the amount and type of resources used in an ambulatory visit. The APGs were developed to encompass the full range of ambulatory care and the variety of ambulatory settings (e.g., same day surgery units, emergency departments, and outpatient clinics). However, APGs do not account for resources expended in phone contacts, home visits, or nursing home visits.

Patients in each APG have similar clinical characteristics and purport to require like amounts of resources. In the APG algorithm, clinical characteristics have priority over resource utilization. This results in the development of more APGs than would be necessary to explain resources use alone. Although APGs were developed to explain the facility component of Medicare ambulatory cost, the system has been constructed to go far beyond the Medicare requirements. APGs have been developed relating to

pregnancy and a number of other disorders (e.g., childhood psychosis, insertion of IUD) not normally associated with Medicare patients. The addition of these patient categories allows the system to account for ambulatory patients across the entire patient population. In addition, the developers of the APGs purport that APGs can be utilized to resource both the facility and professional cost components of an ambulatory visit (Averill et al., 1991). The APGs were developed utilizing information that is routinely collected on the Medicare claim form, including diagnosis (coded in accordance with the ICD-9-CM), procedures (coded in accordance with the CPT), age, gender, and charge data. There are presently 297 APGs which are grouped into 8 major categories: Significant Procedures (145), Medical (80), Laboratory (23), Radiology (20), Ancillary Tests and Procedures (15), Incidental Procedures (8), Chemotherapy Drugs (3), Pathology (2) and Anesthesia (1).

The APGs use the CPT procedure as the initial classification variable. However, not all CPT procedures are used in the APGs. Only those procedures which have been designated as outpatient procedures by the developers are utilized. The designation, outpatient or inpatient, was determined by whether or not the procedure required a minimum of 24 hours of postoperative recovery time or monitoring before the patient could be safely discharged. Diagram 1 contains a Schematic of APG Initial Classification Variable.

DIAGRAM 1 SCHEMATIC OF APG INITIAL CLASSIFICATION VARIABLE



Significant Procedure Ambulatory Patient Groups

The 145 Significant Procedure APGs are defined as procedures that are normally scheduled as the primary reason for the visit and utilize the most time and resources during the visit. Significant ambulatory procedures are subdivided into groups of CPT codes based on one of 13 body systems in Table 1.

TABLE 1 Body Systems Used in Developing the Significant Procedure Classification

BODY SYSTEM
1. Skin, Subcutaneous Tissue and Muscle
2. Breast
3. Bone, Joint and Tendon
4. Respiratory, Mouth, Nose, and Throat
5. Cardiovascular
6. Hematology, Lymphatic, and Endocrine
7. Digestive
8. Urinary
9. Male Reproductive
10. Female Reproductive
11. Nervous
12. Eye
13. Ear

After each significant procedure is assigned to a body system, the procedures in each system are subdivided into clinically similar classes. Eight classification variables were considered in the formation of the procedure classes.

A listing of the eight variables used to develop the Significant Procedure APGs, with examples, is contained in Table 2.

TABLE 2 Classification Variables and Examples Considered in the Formation of the Significant Procedure Groups

VARIABLE	EXAMPLE
Site	Face, Hand, Leg
Extent	Excision Size: 1 cm versus 20 cm
Purpose	Diagnostic or Therapeutic
Type	Incision, Excision, Repair
Method	Surgical, Endoscopic, etc.
Device	Insertion or Removal
Medical Specialty	Urology, Gynecology, etc.
Complexity	Time Needed to Perform Procedure

In terms of priority, the classification variable "method" was viewed as the most critical. The rationale was that different methods of treatment such as surgery, catheterization, laser and needle often require different amounts and types of resources (e.g., time, equipment, etc.). Although "method" was generally considered to be the most critical variable, exceptions to this rule were made in a number of areas. One area was the male reproductive system. Since most male reproductive procedures are surgical, the male reproductive body system was initially subdivided on site and not method. Other exceptions included surgical procedures, usually subdivided based on type (e.g., incision, excision, or repair), and endoscopic procedures that were often subdivided into separate classes depending on purpose (e.g., diagnostic or therapeutic). In the development of the Significant Procedure APGs, provider specialty was not used. However, procedures normally performed by different medical specialists are usually found in different APGs. The process of using well-defined body systems and classification variables, in conjunction with clinical judgement, resulted in the development of 145 Significant Procedure APGs. A complete listing of the significant APGs is contained in Appendix A (Averill et al., 1991).

Medical Ambulatory Patient Groups

A second major category of APGs is the Medical APGs. At the time of this evaluation there were 80 Medical APGs. The Medical APGs preclude the presence of a Significant Procedure APG during the visit. In essence, Medical APGs describe patients who received care, but this care did not entail a Significant Procedure. The patients in this category may have received a wide range of services, depending on the condition of the patient at the time of the visit, and may have required the expenditure

of varying amounts of resources. Similar to the development of the Significant Procedure APGs, the data used to develop the Medical APGs included Medicare charge data, the age, gender, and patient diagnosis, including signs, symptoms and findings according to conventions contained in the ICD-9-CM. The principal variable used to develop the Medical APGs was the ICD-9-CM diagnosis coded as the reason for the visit, adhering to the following standard coding conventions:

1. Diagnoses are coded to the highest degree of certainty known at the time of the visit.
2. Signs, Symptoms, and Findings (SSFs) that are an integral part of an established disease are not coded as a secondary diagnoses.
3. SSFs that are not routinely associated with an established disease may be coded as an additional diagnoses.
4. Acute diseases are coded at every visit until there is no evidence of the disease.
5. Chronic diseases treated on an ongoing basis are coded as many times as the patient received treatment for the disease.

As the developers of the APGs point out, "the rules for coding SSFs are especially important since the treatment of the medical patient is often highly influenced by the SSFs present at the time of the visit" (Averill et al., 1991). However, because of the opportunity for upcoding, the SSFs used in the definition of the Medical APGs were limited to those with the following characteristics:

1. SSFs that have relatively precise clinical meaning.
2. SSFs that were significant enough not to be a routine part of most diseases.
3. SSFs that were significant enough to tend to dominate the resources used during the visit.

The first step in the development of the Medical APGs was to assign each ICD-9-CM diagnosis code to one of 9 etiology categories as contained in Table 3.

TABLE 3 Medical APG Etiology Categories

MEDICAL APG ETIOLOGY CATEGORIES
1. Well Care and Administrative
2. Malignancy
3. Trauma
4. Poisoning
5. Mental Disease
6. Alcohol and Drug Abuse
7. Pregnancy
8. Neonate
9. Other Etiology

The 9 etiology categories were then subdivided by 14 body systems as contained in Table 4.

TABLE 4 Medical APG Body Systems

MEDICAL APG BODY SYSTEMS
1. Nervous Disease
2. Eye Diseases
3. Ear, Nose, Throat and Mouth Diseases
4. Respiratory Diseases
5. Cardiovascular Diseases
6. Digestive Diseases
7. Musculoskeletal Diseases
8. Skin and Breast Diseases
9. Endocrine, Nutritional and Metabolic Diseases
10. Kidney and Urinary Tract Diseases
11. Male Reproductive Di ases
12. Female Reproductive ..seases
13. Immunologic and Hematologic Diseases
14. Infectious Diseases

After deriving the preliminary APGs using etiology and body system variables, additional variables were employed to further subdivide each subclass into groups with greater homogeneity. A list of the Medical APG classification variables is contained in Table 5.

TABLE 5 Classification Variables Employed in the Development of the Medical APGs

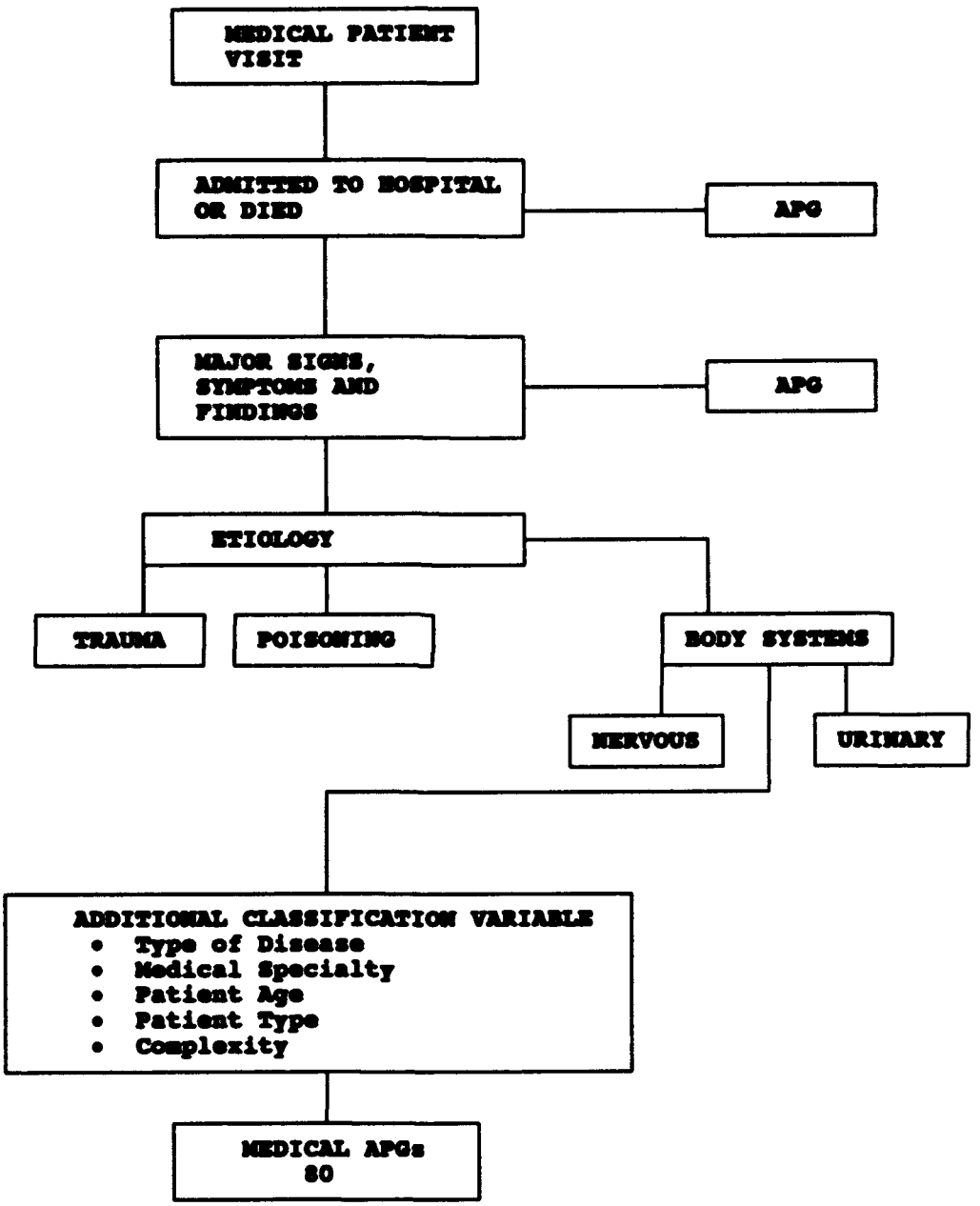
CLASSIFICATION VARIABLE	EXAMPLE
Etiology	Trauma, Malignancy, etc.
Body System	Respiratory, Digestive, etc.
Type of Disease	Acute or Chronic
Medical Specialty	Psychiatry, Gynecology, etc.
Patient Age	Pediatric, Adult, etc.
Patient Type	New or Old
Complexity	Time Required to Treat the Patient

While all of the classification variables were considered in the development of the Medical APGs, not all were used. For example, whether a type of disease was acute or chronic was not

explicitly used in the formation of the Medical APGs. There are Medical APGs which contain only diseases that are acute or chronic, but a Medical APG was never created for the express purpose of identifying acute or chronic disease. Similar to the Significant Procedure APGs, provider specialty was never explicitly used in the Medical APG formation. However, diseases normally treated by different medical specialties were usually placed in different APGs. The age of a patient was utilized when the treatment of the disease varied by age. The variable, patient complexity, was used with complexity being analogous to the amount of time typically required to treat a specific type of patient. The variable, old verses new patient, which was used in the development of the AVGs, was not used in the development of the APGs as it is difficult to establish a precise definition for "new patient" and the data element, old or new patient, is not currently collected on the Medicare claim form.

The final issue considered in the formation of the Medical APGs was the amount and type of ancillary services that would be typically provided to a patient. Since the cost of some ancillary services will be included in the base payment, patients with different profiles of ancillary service consumption needed to be in different APGs. Diagram 2 contains a schematic of Medical APGs. A complete listing of the Medical APGs is included in Appendix B.

DIAGRAM 2 SCHEMATIC OF MEDICAL APGs



Ancillary Tests and Procedures Ambulatory Patient Groups

The Ancillary Tests and Procedures category encompasses groupings of ancillary tests (e.g., laboratory, radiology, and pathology) and ancillary procedures (e.g., immunization, anesthesia, insertion of an IUD, etc.). Ancillary APGs were developed for each type of ancillary service. Unlike the Significant Procedure and Medical APGs, the Ancillary APGs do not normally constitute the reason for the medical visit but may represent an additional cost. There are 72 Ancillary APGs divided into seven categories: Laboratory (23), Radiology (20), Ancillary Test and Procedures (15), Incidental Procedures (8), Chemotherapy Drugs (3), Pathology (2), and Anesthesia (1).

The Laboratory Ancillary APGs are the largest ancillary tests and procedures subcategory with 23 APG groupings. There were four major classification variables considered in the development of the Laboratory APGs. The four classification variables with examples are depicted in Table 6.

TABLE 6 Laboratory Classification Variables

CLASSIFICATION VARIABLE	EXAMPLE
Laboratory Department or Type	Chemistry, Hematology
Testing Method	Radioimmunoassay
Bodily Source of Specimen	Blood, Urine
Complexity	Time, Skill Level and Equipment Needed to Perform Test

The primary variable used to develop the Laboratory APGs was the department in which the laboratory test would typically be performed. Thus, tests commonly performed by the different laboratory departments (e.g., hematology, microbiology, toxicology) were assigned to different APGs. While the testing method was selected as a classification variable, it was used in a limited way. As a result, different methods for performing the same test were usually assigned to the same APG. This appears to be an appropriate decision. Secondly, tests that required more time, technicians with greater skill levels, or expensive equipment, were assigned to different APGs. Finally, the laboratory value units developed by the American College of Pathology were utilized to complete the Laboratory APGs. A listing of the Laboratory APGs is contained in Appendix E.

There are 20 Radiology APGs. There were four classification variables used in the formation of the Radiology APGs. Table 7 contains the radiology classification variables and examples.

TABLE 7 Radiology APGs Classification Variables

CLASSIFICATION VARIABLE	EXAMPLE
Type of Equipment	MRI, CAT
Contrast Media	Used or Not Used
Anatomic Site	Digestive, Circulatory
Purpose	Diagnostic, Therapeutic

The type of equipment (MRI, CT, plain film, etc.) was utilized as the principal classification variable in the formulation of the Radiology APGs. This is appropriate since the cost of radiology equipment varies considerably across the different types of radiological procedures. A listing of the Radiology APGs is contained in Appendix D.

The subcategory Ancillary Tests and Procedures accounted for 15 APGs. Ancillary procedures, by definition, are procedures that do not dominate the time and resources extended during a visit. However, ancillary procedures performed as part of a medical visit do increase the actual cost of the visit. Ancillary procedures include immunizations, which are divided into three APGs based primarily on the cost of the vaccine. Other ancillary tests and procedures include introduction of needles and catheters, simple anoscope, biofeedback, and cardiogram. A complete listing of the Ancillary Tests and Procedures APGs can be found in Appendix E.

There are eight Incidental Procedure (ancillary) APGs. These eight APGs can be subdivided into three major areas: (a) professional service (1 APG), (b) mental health (5 APGs) and (c) radiology (2 APGs). Appendix F contains a listing of all Incidental Procedure APGs.

There are three APGs for Chemotherapy Drugs. These APGs are based on the cost of the chemotherapy drug (Appendix G). Additionally, there are two Significant Procedure APGs that are based on the route of administration of the chemotherapy (e.g., IV push versus continuous infusion, Appendix H). Therefore, the payment for a chemotherapy visit consists of two APGs, one for the route of administration and one for the chemotherapy drug.

There are two Pathology Ancillary Service APGs based on the complexity of the pathology test. Pathology test procedures requiring greater time or skill level are assigned to the Complex Pathology Ancillary Service APG. Those requiring less time or skill are assigned to the Simple Pathology Ancillary Service APG. Appendix I contains the listing of these APGs.

The final Ancillary Service APG is the Anesthesia APG. Anesthesiology procedures are all assigned to a single APG. This is consistent with CPT coding which does not differentiate between local and general anesthesia. The Anesthesia APG is listed in Appendix J.

Summary of the APG System

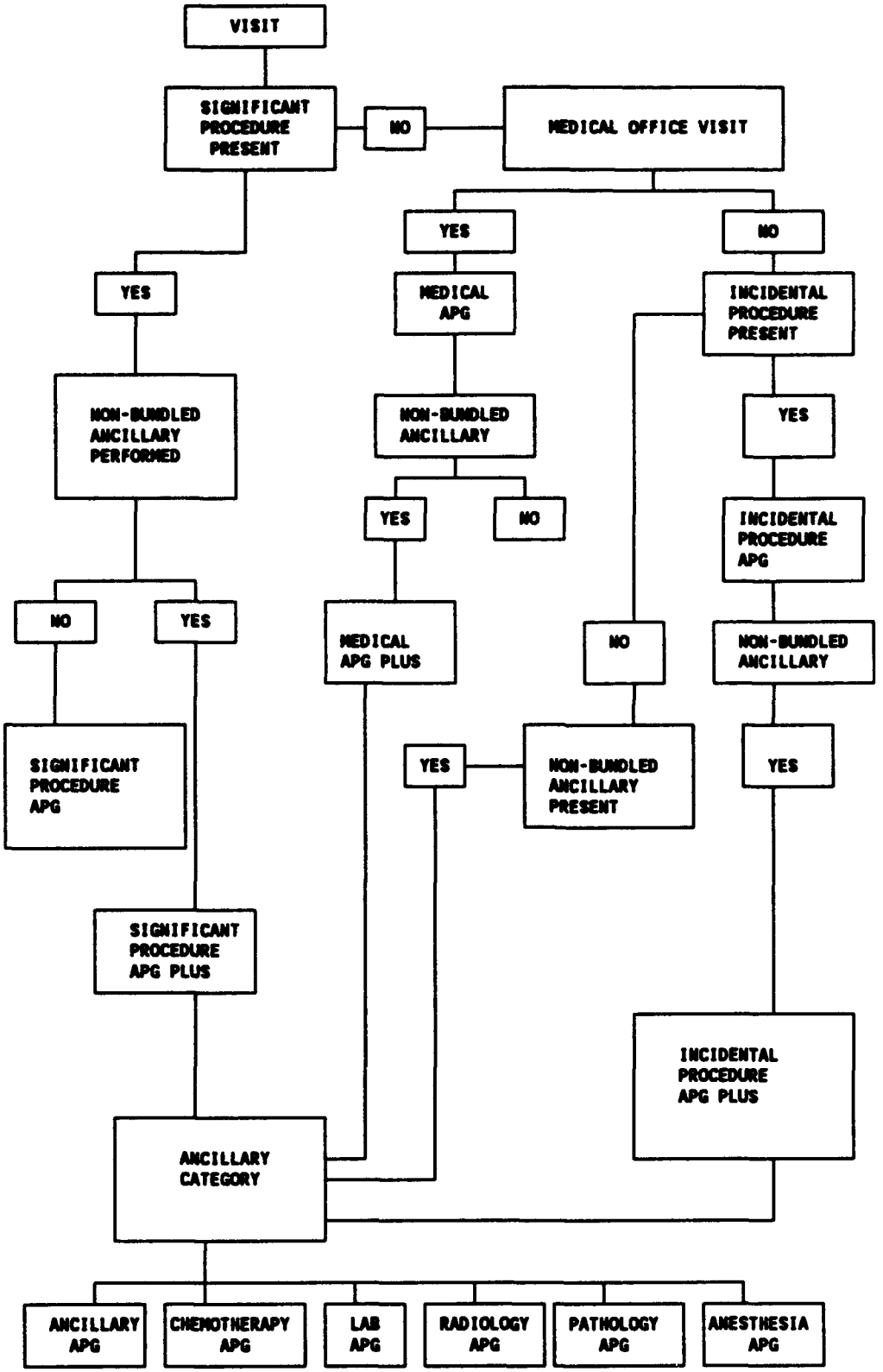
The Ambulatory Patient Groups are a visit-based ambulatory reimbursement classification system designed to explain the amount and type of resources consumed in an ambulatory visit. Patient visits in each APG have similar clinical characteristics and require like amounts of resources. There are 297 groups in the APG system ranging in value from 1 to 977 (APG groups are not numbered consecutively). The system is designed to cover the full range of ambulatory services. At the time of this investigation the APGs contained 145 Significant Procedure APGs, 80 Medical APGs, and 72 Ancillary APGs. Diagram 3 provides a schematic of the APG system.

The APG system incorporates three methods of collapsing APGs into a single payment. These three are (a) significant procedure consolidation, (b) ancillary packaging, and (c) multiple significant procedure and ancillary discounting. Significant procedure consolidation refers to the collapsing of multiple related Significant Procedure APGs into a single APG (Sulvetta, 1992).

Ancillary packaging refers to the inclusion of certain ancillary services into the APG payment rate for a Significant Procedure or Medical APG. It should be noted that while the APGs were designed to be clinically meaningful, the ancillary packaging was not. It is based on a list of 29 APG groups that are always packaged. The Incidental APGs are always packaged as well.

The final method of collapsing APGs is multiple significant procedure and ancillary discounting. The APG developers recommend that when multiple unrelated significant procedures are performed, the first is reimbursed at 100% of the payment amount, the second at 40%, and the third and subsequent APGs at 20%. According to the APG final report, duplicate Significant Procedure APGs are not collapsed or discounted. However, according to the software package, version 1.0, duplicate significant procedure APGs are consolidated. Duplicate laboratory APGs are reimbursed at the rate of 100% for the first and 80% for subsequent APGs. Duplicate nonpackaged, nonlaboratory tests are reimbursed under the same discount rates applied to significant procedures (100%, 40%, 20%, etc.). Unfortunately, there is no rationale or data in the final 3M-HIS report regarding how these discount rates were derived.

DIAGRAM 3 SCHEMATIC OF THE APG SYSTEM



METHODOLOGY

Sample

An effective evaluation of any ambulatory classification system is best accomplished through the use of a large data base containing a diversity of patients (e.g., age and gender) and types of visit (e.g., procedures and diagnoses). The ACES team used a sample of data from the Army Medical Department's Ambulatory Care Data Base (ACDB) study which meets these requirements (Georgoulakis et al., 1988). Researchers conducting the ACDB study collected clinical data on visits from all outpatient departments. During the 21-month data collection phase of the study, over 3.1 million patient visits were recorded from six study hospitals. These visits represented care provided by more than 4,000 health care providers across all Army outpatient medical specialties. For the purpose of this study, the researchers randomly selected 516,006 visits from a cleaned data set of over a million visits, drawn from the 3.1 million. This data is referred to as Sample 1.

Data Collection Instruments

Because of the magnitude of the project, Mark Sense Technology was selected as the most appropriate and cost efficient method of data collection. Mark Sense Technology allows for pencil entries to be electronically scanned for data and subsequently entered into a computerized data base. In order to gain the most benefit from the study, a data collection form was developed for each specialty. The patient collection instruments consisted of the same categories of data elements across all specialties. The forms consisted of four sections. The first section was completed by the patient and consisted of identifying information (e.g., social security number, age). The second section contained administrative information that was completed by the clinic receptionist or secretary (e.g., location of visit). The third and fourth sections required completion by health care providers. Elements in this section included length of time spent with the patient, diagnoses and procedures, disposition, etc.

Study Hospitals

The six hospitals selected for the study have diverse missions and populations and constitute a representative sample of Army Medical Department health care. Collectively, these hospitals serve a catchment area population of nearly a half million (424,000) beneficiaries. For example, Brooke Army Medical Center (BAMC), Fort Sam Houston, San Antonio, Texas, is a 500 bed facility which, in addition to providing a complete array of outpatient services, is also a teaching hospital and operates a Level I trauma center. BAMC serves over 17,000 active-duty

military personnel, 53,000 military family members, and 39,000 retired military beneficiaries (Berman, Coleridge, McMurray, 1989). Additionally, BAMC serves as one of three trauma centers in San Antonio and accepts all unstable civilian emergencies within its geographic catchment area. Womack Army Medical Center (WAMC), Fort Bragg, Fayetteville, North Carolina, is a 300-bed facility providing extensive outpatient services and contains a Level II trauma center. WAMC provides care to the 82nd Airborne Division, as well as to large family member and retired military populations. The total population served is in excess of 125,000 beneficiaries. The remaining four hospitals in the study operate Level III emergency departments. Moncrief Army Community Hospital, Columbia, Fort Jackson, South Carolina, provides services to a large population of basic trainees, some tenant troops (troops who have their headquarters at a different installation), retirees, and family members. Moncrief also provides a full array of outpatient services and operates 175-beds. Moncrief's catchment population contains slightly more than 55,000 beneficiaries. Blanchfield Army Community Hospital, Clarksville, Fort Campbell, Kentucky, is a 200-bed facility and provides services to the 101st Airborne Division, their family members and a retired military population. The beneficiary population of Blanchfield is approximately 70,000. Bayne-Jones Army Hospital, Fort Polk, Leesville, Louisiana, operates 150-beds and provides a full array of outpatient services to service members, their families, and retirees. Bayne-Jones' catchment population is around 40,000. The final MTF included in the study was Fox Army Community Hospital at Redstone Arsenal in Huntsville, Alabama. This hospital serves a stable military and beneficiary population of approximately 25,000 individuals. Fox primarily provides outpatient services and is a 100-bed facility.

Clinical Reliability of the Data

To provide an accurate and objective assessment of the quality of the data collected in the ACDB, a standardized scoring instrument was developed. Utilizing a modified Delphi technique (Polit & Hungler, 1983), the most important administrative and clinical data elements collected in the patient visits were determined. Each of the data elements was then discussed, rank ordered, and assigned a relative value in terms of importance to the study. Using this weighing process, members of the study group selected three administrative elements and two clinical data elements. The data elements which represented the administrative area included the sponsor's social security number with the patient's family member prefix, the date of visit, and the clinic code. The selected clinical data elements consisted of the primary diagnosis and procedure code. Following a pilot study, a sample of 9,015 medical records was compared with the ACDB records. An analysis of the records indicated a mean score of 10.56 (11 was the maximum score) and a standard deviation of

1.27. The high mean scores indicate an extremely high degree of reliability between the medical record and the ACDB record.

Diagnostic and Procedural Code Remapping

Under the direction of the physician member of the ACES staff, the diagnoses and procedure codes that were extended in the ACDB study were recoded into conventional ICD-9-CM and CPT-4 nomenclature. Consultants from various specialties assisted in recoding the more esoteric procedures. Clinical department chiefs at BAMC provided most consultations. The proximity of BAMC simplified in-person and telephonic consultations.

Unfortunately, many consultants were unfamiliar with CPT-4 codes, so they provided information that the staff physician used to recode the extended procedure codes. In these cases, the consultants did not provide the actual codes, but their input assisted the staff physician in making selections. This method of code selection offered greater uniformity and reduced specialty bias in the recoding process.

Some procedures listed on the data collection forms were more specific and some less specific than those in CPT-4. When the listed procedure possessed multiple CPT-4 counterparts, a CPT-4 code of common or medium technical weight was assigned. This is especially evident in assignment of codes for surgical procedures. CPT-4 specifies surgical procedures by anatomical site, whereas the ACDB clinical data does not.

The lists of codes for diagnoses were developed based on ICD-9-CM. Additional codes were created so that more specificity regarding diagnoses could be captured. Although these expanded codes provided valuable information, they presented a problem in that the algorithms being used for classification recognized only valid ICD-9-CM codes. Therefore, it was necessary to map any modified diagnoses codes to the most equivalent ICD-9-CM code.

During the ACDB study, a total of 5,990 different diagnoses codes were utilized. Of these codes, a little less than one third (1,890) were modified ICD-9-CM codes.

Two companies, Code 3 and Health Systems International were contracted to remap the extended diagnoses and procedure codes to the ICD-9-CM and CPT-4 classification system, respectively. This involved approximately 70% of the diagnoses and procedures that required remapping. In most cases, Code 3 mapping of diagnoses was used. Specialty areas either not coded or only partially coded by Code 3 were Nutrition Care, Social Work, Psychology, Occupational Therapy, and those portions of Physical Therapy and Orthopedics having to do with appliances and durable medical equipment.

Of the 1,890 modified codes, 101 were from the Social Work forms. Of all the diagnosis mapping, this area was the most difficult because many problems did not lend themselves to the disease classification system. Examples of problems are (a) Illiterate, (b) poor money management, (c) unreliable transportation, and (d) resource delay responding to need. However, expertise in this area was available within the study group, and the most appropriate ICD-9-CM choices were made. Diagnosis mapping was reviewed by specialists in many areas and their input was used to produce the final map.

The percentage of diagnoses and procedures requiring recoding varied among specialties. For example, all procedures listed on the Neurology Clinic form were bona fide CPT-4 codes, whereas all procedures listed for the Nutrition Care Clinic were extended codes not found in CPT-4. CPT-4 is designed for physician services.

Many specific procedures, and frequently minor ones, with no corresponding CPT-4 codes were recoded to general services codes (minimal, brief, extended service, etc.). Because of the nature of the CPT-4 manual this occurred more frequently with the primary care and non-surgical specialties. It contains more codes for surgical procedures thus allowing for greater specificity in that area.

Twenty-one of the 50 most commonly used procedures required coding to general services. The assigned level of service generally corresponded to the estimated amount of time required to perform the indicated procedure (less than 15 minutes was minimal, 15 to 30 minutes was counted as brief, etc.) Supplies and other resources consumed also received consideration during the assignment to general services procedures.

Many ACDB visits contain multiple procedures. Because a number of procedures designated on the data collection forms were recoded to general services, some visits appear to be a combination of two or more general services (such as a minimal service visit plus a brief service visit). If two codes were mapped to the same code, duplicates were eliminated. Appendices K and L contain code conversions for procedures and diagnoses, respectively.

Another problem arising over coding conventions used on the data collection forms centered around the ICD-9-CM diagnosis code V655, described as "person with feared complaint in whom no diagnosis was made." This code was listed on the forms as "No Problem Noted" and was available for use by all health care providers involved in the data collection effort.

As more than 8% of visits in the data base contained this diagnosis, a careful analysis by clinic was performed. A good

number of the V655 diagnoses were for various types of physical exams, including eye exams.

To provide more precision in visits where V655 was used, several corrective steps were taken. If a meaningful, secondary diagnosis had been provided, then that diagnosis was used. If no secondary diagnosis had been provided, then other V codes with a higher degree of specificity were selected by the research physician on the team.

Special Coding Considerations

In order to use pertinent ancillary services data (e.g., number and type of x-rays, number of prescriptions, number of laboratory tests), information had to be translated into a coding format. For example, the Ordered Out of Clinic data element contained information on specific types of x-rays like CT Scan and MR Scan. However, no CPT-4 code was used to designate which type of CT Scan or MR Scan was used. The study team physician reviewed the data to determine the most appropriate codes in each case. In some clinics, there was a possibility that a particular radiological procedure might have been marked on both the front and back of the form. To avoid double counting of radiological procedures, the algorithm contained in Table 8 was developed.

Some of the information from the front of the form was converted into a CPT-4 procedure code. If, by converting this information, the number of procedures exceeded 13, the additional procedure was dropped. Since there were so few cases that exceeded 13, it was not considered to be a problem. Table 8 contains a list of the radiological and other special procedures with their assigned CPT-4 codes.

TABLE 8 Radiological and Other Special Procedures

PROCEDURE	CPT-4 CODE
Barium Study	74270
IVP	74400 (If 74415 was marked on the back of the form, then 74415 was used instead of 74400).
CT Scan	70470 (If 71250 was marked on the back of the form, then 71250 was used instead).
MR Scan	70550
Ultrasound	76700 (If a code fell within the range of 76500-76999 and was marked on the back of the form, then that code was used instead).
Nuclear Medicine	78801 (If a code fell within the range of 78000-79999 and was marked on the back of the form, then that code was used instead).
Angiographic	75501
Adaptive Appliance	99070
EEG	95819 (If a code fell within the range of 95819-95823 and was marked on the back of the form, then that code was used instead).
Pulmonary	94010
EMG	95860 (If a code was within the range of 95860-95869 and was marked on the back of the form, then that code was used).

Cost Methodology

To accurately evaluate the various ambulatory classification systems, the development of an equitable per visit cost was necessary. This presented a significant challenge in that it required a comprehensive individual cost for each patient encounter (visit) in the ACDB data file.

The study team developed four different methods to approximate a visit cost. The development of the various methodologies was necessary because military hospitals do not use a civilian type cost methodology that is capable of producing a "bill" or more precisely a "cost" for each individual visit. Military hospitals are funded from various funding sources. For example, military pay and allowances are paid from a general fund account and may be regarded as "sunk" costs in that they are paid to military health care providers regardless of the number of patients for whom they provide care. Civilian health care provider salaries and benefits are resourced from major command allocation of funds, balanced with authorized personnel ceilings. The MTF commanders, once given their allocacions of personnel,

have nominal authority to manage personnel and associated costs. Normal capital expenses, new buildings, and major equipment are provided subject to availability of funds from major commands or higher command levels and are not included in the hospital's operating budget.

Utilities are considered installation operating expenses and, as such, are not included in the hospital's operating budget. However, due to the increased emphasis on cost recovery for these and other services, these costs are now contained in the Medical Expense Performance Report System (MEPRS) at the MTF level. Finally, it was not possible for the study team to develop cost methodologies associated with indirect health care costs, such as provider malpractice insurance, forms, etc. Nevertheless, as the military adapts to new ambulatory costing and resource allocation methodologies, all inclusive expense data is vital to insure fair and equitable MTF funding.

Definitions of Cost Formula Components

The following are descriptions of the various components which make up the cost formulas:

ANCILLARY: For those laboratory procedures indicated by CPT procedure codes within the range of 80002-89399, a percentage of the CHAMPUS reimbursement rate was used. To arrive at this percentage, a military average for laboratory was calculated (total number of visits in the sample, 516,006, multiplied by the average per visit MEPRS laboratory reimbursement of $3.36). This total was divided by the actual number of laboratory procedures performed (152,982) to provide an average cost per procedure of $11.33. The average cost for all CHAMPUS laboratory procedures was $18.25. The percentage of military to CHAMPUS laboratory cost ($11.33/$18.25) was 62.1%. This percentage was applied to laboratory procedures.

CHAMPUS: These rates are based on the CHAMPUS prevailing rate for each CPT procedure. CHAMPUS prevailing rates are the amount of money paid on a total number of claims for a particular state. The claims are paid at the 80th percentile as the prevailing rate for the procedure in that state. The CHAMPUS prevailing rates in this study were the averages of the regional rates at the time of data collection. Additionally, the CHAMPUS prevailing rate consists of both a technical and a professional component. The technical component accounts for 60% of the prevailing rate and the professional component accounts for the remaining 40%.

CLMEAN: An average procedure cost per clinic group was employed for calculating a military supply cost. This average was computed by taking the sum of all CHAMPUS procedure costs for a clinic grouping divided by the number of visits in that particular grouping.

FACCOMP: The facility component is obtained by using the following formula: AVERAGE PROCEDURE COST PER MINUTE MULTIPLIED BY PRIMARY PROVIDER TIME. The average procedure cost (AVGPROC COST) is 60% of the sum of the procedure costs for all visits within a clinic grouping divided by the sum of the providers' time for all visits within a clinic grouping. (60% represents the technical component of the CHAMPUS fee.)

LAB: The number of laboratory procedures ordered during a visit was indicated on the front of the data collection form. This number was then multiplied by a computed average cost. The average cost for laboratory was calculated by multiplying the total number of visits in the sample (516,006) by the military (MEPRS) average reimbursement per visit of $3.36. This total was divided by the actual number of procedures performed (152,982) in the sample to provide an average cost of $11.33 (see Table 9).

LABOR: The labor cost component used in the formulas consisted of a combination of salary and benefits for military and salary only for civilians. It is determined by minutes of contact time with patients. The military labor costs were derived from the Composite Standard Rates for Costing Personnel Services-Military. These composite standard rates for each grade are published annually by Department of the Army, Director of Finance and Accounting, Security Assistance and Cost and Property Accounting Division, Indianapolis, Indiana. Since data were collected across 2 fiscal years, the appropriate rate for each of the study years was used to determine labor costs. The published annual cost (salary and benefits exclusive of medical incentives) for each military pay grade was divided by 2080 (duty hours per year) to derive a basic hourly rate. This hourly rate was then divided by 60 to obtain a rate/minute scale required by this study. The Civilian Health Care Provider Composite Standard Cost Rates were derived from the General Schedule Salary Tables No. 70 (FY85), No. 71 (FY86), No. 72 (FY87). These tables are published by the Office of Personnel Management, Assistant Director for Pay and Benefits, Washington, D.C. For purposes of the study, the median step level of 5 was used within each grade. The annual salary was then divided by 2087 hours (number of civilian productive hours in a calendar year) to derive a basic hourly rate. The hourly rate was then divided by 60 to obtain a rate/per minute scale.

RX: An average cost per prescription ordered was calculated based on the available MEPRS data. The MEPRS cost is spread over all visits without taking into consideration whether a prescription was actually ordered for a particular visit. In order to use the more specific visit services which were contained in the ACDB, it was necessary to compute an average cost per prescription and multiply this by the number of prescriptions ordered for a particular visit. The computations for obtaining the average cost employ the MEPRS average rate per

visit ($5.43) multiplied by the total number of visits (516,006). The result was the total reimbursement ($2,801,912.00). This total rate was divided by the actual number of prescriptions (264,070) filled to determine average cost per unit ($10.61) (Table 9).

X-RAY: The charge for this service was obtained by using 39% of the CHAMPUS rate for those procedures contained in the CPT-4 code range of 70002-79999. Since X-ray procedures have such a wide range of costs ($27.30 for a plain film to $661.00 for a CT Scan), it was decided that a percentage rather than the flat military (MEPRS) rate would be more appropriate. The total reimbursement was calculated by multiplying the number of visits (516,006) in the sample by the average MEPRS reimbursement per visit ($2.49) for a total reimbursement of $1,284,854.90. This was divided by the number of plain films (55,308) for an average military reimbursement of $23.23 per plain film. This ratio ($23.23/$59.52) of military to CHAMPUS was 39%. This percentage was applied to all radiological procedures including high technology procedures like MRI, CT Scan, etc.

TABLE 9 Laboratory and Prescription Average Costs

	TOTAL VISITS	COST PER VISIT	TOTAL COST	N OF PROC	PER UNIT
LAB	516,006	$3.36	$1,733,780.00	152,982	$11.33
RX	516,006	$5.43	$2,801,912.00	264,070	$10.61

Other Special Cost Considerations

The inclusion of x-ray costs in the study formulas presented a special challenge to the study group as only the number and the general types of x-rays were included in the data collection instrument (e.g., plain films, CT scan). To capture the cost of this important aspect of medical care, a staff physician assigned a CPT-4 x-ray procedure code to each clinic. The decision to assign a particular code to a clinic was based on the most common type of x-ray for that clinic.

Some of the CPT-4 procedure codes used in the study had no corresponding CHAMPUS costs. In order to use these codes, the physician assigned to the team selected a related CPT-4 code to substitute for costing purposes.

The Pain Clinic presented another situation which required special treatment. Because of the specificity of the data collection form, duplication of documentation for injections sometimes occurred. To correct this double counting, an algorithm was written which grouped certain CPT-4 procedures

together and assigned a cost based on the most expensive procedure.

Summary of Cost Methodology

In summary, the ACES team developed cost methodologies using a variety of sources (e.g., CHAMPUS prevailing rates, MEPRS cost data) to calculate resource utilization for each military health care visit. The development of each equation was an effort to "accurately account" for costs involved in a medical visit in a military health care setting.

The four cost methodologies, with descriptions follow. The first formula primarily uses military costs, the second, civilian costs. The two remaining formulas represent partial costs. COST3 captures military labor, and COST4 contains reimbursable costs in the current military system.

Cost Formulas

A brief explanation of each costing methodology follows:

COST1 = ***FACCOMP + X-RAY + LAB + RX + LABOR.***

This equation is a combination of actual and estimated military costs. This formula represents the most accurate estimate *of* military costs for a military visit.

COST2 = ***CHAMPUS PROCEDURE RATE.***

The CHAMPUS procedure rate consisted of the total charges (100% of CHAMPUS rate) for each type of office visit, (e.g., brief, intermediate and comprehensive) and 100% of the CHAMPUS rate for X-rays and Laboratory procedures.

COST3 = ***Provider Labor Only.***

This costing methodology accounts for only the cost of the provider time for a visit. The value of time provided by the health care professional was based on the mean salary and benefits determined by the Government Accounting Office for the particular rank and grade. No attempt was made to include the various specialty pay and bonuses provided to physicians.

COST4 = ***(.055 multiplied by CLEMAN) + X-RAY + ANCILLARY + LAB + RX.***

COST4 represents the sum of reimbursable costs as they currently exist in the Army Medical Department. It includes a computed military supply cost. The 5.5% of the

CLEMAN represents this computed supply cost. This percentage was derived with the assistance of Herb Fillmore, New York State Department of Public Health. The 5.5% military supply cost per procedure compares favorably with the supply cost developed and utilized for reimbursement by the New York State Department of Health. The supply costs are based on the average procedure costs for a particular clinic.

Correlation Among Cost Methodologies

There are a number of methods available to determine the relationship among cost methodologies. The most meaningful methodology examines the amount of variance accounted for by each of the cost equations. The relationship among the cost methodologies is provided in Table 10. COST1 and COST3 are highly correlated (.8) largely because of the fact that COST1 includes COST3. COST1 and COST4 are moderately correlated (.5). Much of this correlation may be the result of the common variables shared by both, including x-ray, prescription, and laboratory costs. COST2 has a low correlation (.2-.3) with the military derived cost formulas. COST3 and COST4 have the lowest correlation (.1). This may be expected since there are no common variables and many procedures require no supplies (e.g., psychotherapy). Although all correlations are statistically significant ($p<.05$), this may be due to the large sample size (516,006). Therefore, it may be more appropriate to consider the magnitude of the correlation.

TABLE 10 Relationship Among Cost Methodologies Correlation Coefficient

(N = 516,006)

COST	1	2	3	4
1	1.000			
2	0.3959	1.000		
3	0.8024	0.3376	1.000	
4	0.5360	0.2310	0.1286	1.000

$p<.05$ in all cases.

RESULTS

Installation of APG Computer Program

The study group received a magnetic tape containing the APG software from 3M HIS. This tape was installed at the Fort Detrick Data Processing Center (Directorate of Information Management) Frederick, Maryland. The installation process is described in detail in the Ambulatory Patient Groups Installation Manual Version 1.0 (Averill, et al., 1991). As noted in previous reports (Austin, 1991; Georgoulakis, Selles, & Bolling, in press) the documentation of the APG software is adequate. However, some of the instructions were not sufficiently descriptive and some areas included significant errors (e.g., page 2-1, in the heading of the layout system, the number of files should be changed from 12 to 13).

In order to run the APG program, a driver program was required. The programming expertise required to write the program was similar to other ambulatory classification systems. However, in order to facilitate use of the program, it would be beneficial to include a general driver program with the installation program. This is especially important for facilities that do not have a computer programmer employed.

The APG grouper ran efficiently on the Fort Detrick IBM-3090 computer. However, as noted by Austin, the Medical APGs require code '90000' in the algorithm for APG assignment. As a result the APG software was modified to accommodate the Medical APGs.

Evaluation Criteria

The APGs were evaluated using five major criteria: clinical meaningfulness, statistical relevance, administrative complexity, resource accountability, and provider incentive. The first, clinical meaningfulness, addresses the question "Does the partitioning of the groups reflect sound clinical judgement?" The second criteria, statistical relevance, concerns itself with how much of the variance is explained by the grouping system. When procedures and or diagnoses are closely related in terms of resource use, the resulting group payment rate will be more equitable--fewer cases will be either over or under compensated. Additionally, the variation in resource use should be greater between groups (heterogeneity) than within groups (homogeneity). If these conditions are met, the system as a whole should maximize the explained cost variance attributed to the grouping model (R2), as well as the coefficient of variation (CV) for each group. The CV is used as an indicator of dispersion in comparison to the mean. The smaller the dispersion the less variance within the group. The third criteria, administrative complexity, is an attempt to answer the question as to how

difficult would this system be to implement and operate in a military environment. A system that is administratively simple and does not require extensive new data requirements would be most preferable. The fourth criteria, from a resource management perspective, asks how equitable is the system in terms of allocating resources to the facilities. The final criteria addresses the issue of provider incentives. Since military providers do not receive additional salaries for increased work load the system must contain features that would encourage provider cooperation and permit coherent clinical management.

Demographic Characteristics of Sample

The sample used in this evaluation consisted of 516,006 clinic visits randomly selected from cleaned subsample of over 1 million visits in the ACDB. These visits represent data collected during the first phase of the data collection period and contain complete patient demographic information. Prior to entering this data in the APG grouper program, a series of preliminary analyses were conducted to gain a greater understanding of the population being studied. This was felt to be especially important, since the APGs were being initially designed as a Medicare reimbursement system, but have been reported as applicable to all populations. Having a sample with a broad range of ages provided an objective measure of the APGs ability to encompass the full range of ambulatory services.

The first analysis indicated that of the 516,006 visits, 279,370 (54.15%) were male patients and 236,548 (45.85%) were female patients. In terms of beneficiary status, the retired population (retired service members and their family members who are eligible for care) represented a slightly greater percentage of the sample (39.41%) than the active duty population (38.09%). The remaining 22.50% of the visits were family members of active duty military. A complete analysis of all patients in the sample, by beneficiary status and catchment area, is included in Table 11.

TABLE 11 Patient Visits: Beneficiary Status and Catchment Area

(N = 516,006)

CATCHMENT	ACTIVE DUTY		ACTIVE DUTY DEP		RETIRED		TOTAL NUMBER	TOTAL PERCENT
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT		
REDSTONE	9998	1.94	11508	2.23	21966	4.26	43472	8.42
CAMPBELL	45062	8.73	27716	5.37	24108	4.67	96886	18.77
POLK	3879	7.51	29315	5.68	18400	3.57	86494	16.76
BRAGG	20512	3.97	15079	2.92	14305	2.77	49886	9.67
JACKSON	63089	12.23	9941	1.93	41916	8.12	11955	22.27
BAMC	19140	3.71	22474	4.35	82699	16.02	124313	24.09
TOTAL	196579	38.09	116033	22.48	203394	39.41	516006	100.00

A second analysis of the visit data was conducted to provide information on the age and gender of the patient population. Results of this analysis indicated that the majority of visits (52.24%) were by patients in the 19-34 year old age group. Information on patient age by gender for all visits in the sample is contained in Table 12.

TABLE 12 Patient Visits: Age by Gender

(N = 516,006)

AGE	MALE N	MALE PERCENT	FEMALE N	FEMALE PERCENT	TOTAL N	TOTAL PERCENT
0-2	15119	2.93	13877	2.69	28996	5.62
3-17	33472	6.49	30199	5.85	63671	12.34
18-34	148245	28.73	121310	23.51	269553	52.24
35-44	28497	5.52	23522	4.56	52019	10.08
45-64	38147	7.39	36553	7.08	74700	14.48
65-74	14626	2.83	10150	1.97	24776	4.80
75+	1298	0.25	991	0.19	2289	0.44
TOTAL	279404	54.15	236602	45.85	516006	100.00

When an additional analysis of the data was conducted, looking at age and gender of individual patients rather than by visits, the results were basically the same. This analysis counted the demographic information on the patient only one time, regardless of the number of visits per patient. Thus, the 516,006 visits represented 231,632 patients. Of those patients,

males exceeded females, 56.12% to 43.87%. Consistent with previous findings, the age group 18-24 comprised the largest group of patients (51.98%). Further information on individual patient characteristics, by gender and age, is contained in Table 13.

TABLE 13 Individual Patient Characteristics: Gender by Age

(N = 231,634)

AGE	MALE NUMBER	MALE PERCENT	FEMALE NUMBER	FEMALE PERCENT	TOTAL NUMBER	TOTAL PERCENT
0-2	6,940	3.00	6,475	2.80	13,415	5.79
3-17	17,525	7.57	15,970	6.89	33,495	14.46
18-34	70,650	30.50	49,754	21.48	120,404	51.98
34-44	12,661	5.47	10,323	4.46	22,984	9.92
45-64	16,802	7.25	15,286	6.60	32,088	13.85
65-74	5,052	2.18	3,460	1.49	8,512	3.67
75+	373	0.16	361	0.16	734	0.32
TOTAL	130,003	56.12	101,629	43.87	231,632	100.00

The final demographic analysis determined beneficiary status of individual patients by catchment area. The largest group of patients were seen at BAMC (23.66%), Fort Sam Houston, Texas. Overall, retirees made up the largest group of patients (42.23%), followed by active duty (35.59%), and family members of active duty (22.27%). Information on individual patients by catchment area and beneficiary status is located in Table 14.

TABLE 14 Individual Patient Characteristics: Catchment Area by Beneficiary Status

(N=231,634)

CATCHMENT	ACTIVE DUTY NUMBER	ACTIVE DUTY PERCENT	ACTIVE DUTY DEP NUMBER	ACTIVE DUTY DEP PERCENT	RETIRED NUMBER	RETIRED PERCENT	TOTAL NUMBER	TOTAL PERCENT
REDSTONE	3347	1.44	4880	1.93	10792	4.66	18619	8.04
CAMPBELL	17794	7.68	13173	5.69	11333	4.89	42300	18.26
POLK	12241	5.28	9840	4.25	8046	3.47	30127	13.01
BRAGG	12972	5.60	10367	4.48	10013	4.32	33352	14.40
JACKSON	27761	11.98	4376	1.89	20301	8.76	52438	22.64
BAMC	8120	3.51	9341	4.03	37337	16.12	54798	23.66
TOTAL	82235	35.50	51577	22.27	97822	42.23	231634	100.00

Clinical Analysis of the APGs

The APGs are a visit-based ambulatory reimbursement classification system designed to account for the amount and type of resources consumed in a patient visit. The first criterion in the development of the system was clinical relevance. The system developers were guided by the premise that a clinically meaningful patient classification system would be more readily accepted by health care providers, and would be more useful as a communication and management tool (Averill et al., 1991). In order to evaluate the clinical relevance of the groups, the medical consultant assigned to the study team, with the assistance of medical specialists assigned to BAMC, conducted a clinical review of the APG groups. This review was performed in a systematic fashion by APG category (e.g., Significant Procedure APGs, Ancillary Tests and Procedures APGs, and Medical APGs). Additionally, comments concerning the significant procedure consolidation and discounting methodologies were obtained.

In general, the APG algorithms appear clinically meaningful with some exceptions. For example, the rationale which includes APG 136 (Allergy Tests and Immunotherapy) in the Significant Procedure category of Hematologic, Lymphatic and Endocrine is not readily apparent. This category includes chemotherapy, transfusions, blood exchanges, deep lymph structure, and thyroid procedures. While these procedures may consume similar amounts of resources, they do not group well clinically.

Occupational Therapy and Physical Therapy visits are assigned to one APG category. This implies that all occupational therapy visits reflect similar cost in terms of resource consumption. This simply is not true, as noted in the ACDB study (Georgoulakis et al., 1988). Occupational therapy visit costs vary by provider type, length of session, and type of treatment. A similar situation exists for physical therapy. Additionally, for physical therapy this is magnified by the extremely high volume of visits. Finally, for these clinics, the APGs do not represent any improvement from the Army's Medical Care Composite Unit (MCCU) or Ambulatory Work Unit (AWU) systems, in terms of accounting for workload.

The Ancillary Test and Procedure APGs are confusing, because the title for this major category shares the same name as one of its subcategories (e.g., APGs 443-461, Ancillary Tests and Procedures). The ancillary decision tree for Nuclear Medicine contains gross errors. All nuclear medicine procedures use an internal source of radiation, not external as in radiology. APG 344 (Radiation Therapy) is described in the Ancillary Service Diagram Tree (Appendix F) as being an external therapeutic method performed by nuclear medicine. Radiation therapy and associated procedures are performed by Radiation Oncology, not by Nuclear

Medicine or Radiology. APG 347 (Hyperthermia) is also performed by Radiation Oncology. Therefore, it would be more appropriate to place these procedures in a separate category for Radiation Oncology. An additional error within the APG logic for Nuclear Medicine is that not all therapeutic procedures are performed using injections (some procedures entail the use of orally administered radioactive isotopes, such as thyroid ablation therapy). It appears that this is an area in which further work is indicated.

Within the Ancillary Tests and Procedures APGs, similar problems are encountered; an example is APG 459 (Biofeedback and Hypnotherapy). These procedures can be used in an ancillary fashion to aid a patient in relaxation and anesthesia for certain procedures such as dental work. However, these procedures are more often performed by mental health providers as the major treatment modality. In these situations, the procedures more closely meet the definition of a significant procedure in that they represent the reason for the visit and consume the majority of resources for the visit. Narcosynthesis (Amytal interview, CPT code 90835) is assigned to Incidental Procedure APG 473 (Comprehensive Psychiatric Evaluation and Treatment). This is not appropriate as narcosynthesis is performed by psychiatry and other specialties, and involves Intravenous Infusion (I.V.) of a barbiturate with the associated monitoring. This procedure is extremely different in terms of supplies, setting and equipment than the conventional psychiatric ambulatory visit for evaluation and treatment. It would seem more appropriate to include Narcosynthesis as a Significant Procedure APG for the nervous system, where Electroconvulsive Therapy (ECT) is located.

The Medical APGs also exhibit some errors in logic. For example, the APG decision tree for mental diseases is very confusing. CPT codes 90801-90915 are assigned to Incidental Procedure APGs, except for Electroconvulsive Therapy which is assigned to an APG as a Significant Procedure. However, the ECT visit is assigned to a Medical APG if the 90000 code is included in the visit. If the 90000 is not added, the algorithm will assign the visit to an Incidental Procedure, which by definition has to be bundled with another APG, either a Medical or Significant Procedure APG.

The APGs distinguish Individual Therapy for the diagnoses of Senility/Dementia or Mental Retardation and assigns them to APG 654. Other diagnoses are assigned to APG 655-657 depending on procedures and age. Consultation with the APG developers indicated that they believed that individual psychotherapy was not indicated for these organic mental disorders. This opinion is contrary to clinical experience and research, which clearly indicates that individuals with these disorders require and are in need of and benefit from psychotherapy. Moreover, they are more likely to develop comorbid psychiatric diagnoses such as

depression. Additionally, because of the cognitive impairment involved in these patients, psychotherapy can be more time-consuming.

Finally, the mental health data from the ACDB study supports the author's clinical experience. The mean time spent by the primary provider with patients with dementia was 61 minutes. No other diagnostic category of psychiatric patients consumed as much mean provider time. For patients with a diagnosis of mental retardation, the mean provider time was 53 minutes.

The use of the term "Brief Psychotherapy" in APGs 655 and 688 is misleading. Mental health professionals employ this term to describe the length of the treatment, not the length of the individual session. CPT codes address the length of the individual session. The APG system views psychological testing as an incidental procedure included in APG 473 (Comprehensive Psychiatric Evaluation and Treatment). This is not appropriate as psychological testing is typically conducted as a separate entity from psychiatric evaluation and treatment, and is much more time and resource intensive.

The significant procedure and consolidation list may present one of the most difficult challenges in the implementation of the APGs in the military or civilian community. The APGs were developed as a cost containment measure to limit charges and to apply economy of scale to health care. Unfortunately, while the concept of economy of scale has merit in industry, it may be inappropriate in a health care environment, particularly in a military health care environment. For example, the major difference between military medicine and civilian medicine is that in the military there are no inflated charges to offset losses in reimbursement under the APG consolidation and discounting for multiple procedures. In fact, there is no data available to indicate that civilian hospitals would be able to absorb the lost revenue under this economy of scale concept. In terms of costs not charges, there is little, if any, economy of scale in the performance of multiple procedures on a patient. Each medical procedure entails a period of time to perform, consumes supplies, requires equipment, and cleanup. These requirements often do not decrease because the provider is required to perform multiple procedures on a given patient in a single visit. More specifically, APG 58 (Splints, Strapping, and Cast Removal) is consolidated under many APGs, which can be problematic. For example, it is consolidated under APG 4 (Complex Incision and Drainage). A complex incision and drainage not only requires a given amount of time but also uses a quantity of supplies and equipment. Additional time, different supplies, and different equipment are required if the patient first undergoes a cast removal. Frequently, there is a specific treatment room called the cast room for the placement and removal of casts. The patient is then moved to another room for wound

care and returned to the cast room if a new cast is placed. Each step consumes time and uses different supplies and equipment. The fact that the patient undergoes these procedures in the same visit does not change the supplies or equipment needs and has little impact on how long a patient requires a treatment room. Procedures require a set amount of time to complete and that time is not shortened because there are other procedures to perform.

In summary, APG consolidation can be a viable concept in appropriate situations. These situations are (a) if a provider performs the same procedure on the same site and lists one procedure as simple and the other one as complex; (b) if a provider performs a procedure which is a component of a larger procedure which includes the time, equipment, and supplies of the less complex procedure. Under these conditions consolidation would be appropriate, equitable, and serve as a control for erroneous or misleading coding practices. For example, APG 3 (Simple Incision and Drainage) could easily be consolidated under APG 4 (Complex Incision and Drainage) if the incision and drainage is performed on the same side. However, when the APG grouper consolidates different procedures which involve different supplies, equipment, and additional time, then consolidation is not appropriate for a number of reasons. First, the consolidation list developed by 3M-HIS is not supported by any empirical research which demonstrates that consolidated procedures consume no more resources than the major procedure. The list of consolidated procedures is at best theoretically derived and this theory *is not supported by Army clinical* experience or research. Second, from a clinical perspective this may result in the practitioner changing his or her practice patterns by not performing multiple procedures in the same visit in order to maximize reimbursements. On the other hand the policy of consolidation may inadvertently cause the provider to engage in an inappropriate practice by performing too many procedures in a single visit. This could subject the practitioner to malpractice suits and placing the patient at risk. Third, from a facility perspective consolidation would result in lost revenues since they would not be fully compensated for necessary expenditures. Furthermore, facilities would have monetary incentives to postpone or shift procedures to another date in order to maximize revenue. Finally, this would increase the cost and inconvenience the patient.

APG Evaluation

APG Grouping of Data

The first examination of the data consisted of looking at the number of visits that grouped and how they grouped into the various APGs. Of the 516,006 visits in the sample, 448,222 (86.8%) were assigned a medical APG, 64,888 (12.6%) were assigned a procedural APG, 2,552 (.0049%) were assigned to APG 999 (error

APG), and 344 (.0006%) were not grouped. In the APG algorithm there are five conditions, which an APG 999 is assigned, indicating an error or inconsistency was present. First, the CPT procedure represents an inpatient code (e.g., CPT code 61154 Burr hole(s) with evacuation and/or drainage of hematoma, extradural or subdural bilateral). Second, CPT codes represent profiles of laboratory tests, such as general health screen profile (CPT code 80050) and pre-marital profile (CPT code 80052). These are considered an error as there is no agreement in the literature regarding the appropriate composition of these profiles. Third, there are some ICD-9-CM V-codes that represent procedures but are read as diagnoses by the APG Grouper (e.g., ICD-9-CM, V251, Insertion of IUD). Fourth, ICD-9-CM codes that describe situations that could not represent a reason for an outpatient visit (e.g., 7981 instantaneous death). If a patient has one of these ICD-9-CM codes as a visit, the record (claim) is considered an error. Fifth, if there are no valid CPT or ICD-9-CM codes in the record (claim), then no APGs can be assigned, and the claim is considered an error.

A review of the 2,552 records that contained error APGs indicated that the errors were caused in three ways: (a) codes that were developed for the study, but because of their low frequency were not mapped into conventional ICD-9-CM codes (595 records); (b) major ICD-9-CM headings that are not included in the APG algorithm (27 records)(e.g., Epilepsy 345); and (c) codes (1930 records) which would require modification of a digit (e.g., ICD-9-CM code 160.0 malignant neoplasm of nasal cavities). The study code for this diagnosis was 16000 and the APG code was 1600. Records not assigned an APG (344 records) contained either (a) invalid diagnosis or procedure, or (b) diagnosis inconsistent with other variables. All 80 medical APGs were utilized. Table 15 contains a frequency distribution of the medical APGs in ascending order. Table 16 is a frequency distribution of the medical APGs in descending order of occurrence. Fifty-six percent of the medical visits were grouped into 10 APGs. Fifteen APGs accounted for 68% of the medical visits. The largest group APG 842, Musculoskeletal Diseases Except Back Disorders, contained 41,863 visits and represented 9.3 percent of the sample. Clinically this seems appropriate given the military beneficiary population (e.g., young adults and an aging retiree population). APG 664 (Comprehensive Therapy for Drug Abuse with Mental Illness) contained the fewest numbers of visits (13). Since the data set, by design, contained a limited number of drug abuse visits, this was expected. To gain a better understanding of the distribution of the APG visits, an analysis of the range of the visits by APG was conducted. As seen in Table 17, the majority of Medical APGs (nearly 44%) contained between 1001-5000 visits.

TABLE 15 Frequency Distribution of Medical APGs in Ascending Order of APG Number

(N = 450,774)

APG NUMBER	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
601	267	0.1	267	0.1
602	402	0.1	669	0.1
603	310	0.1	979	0.2
604	1104	0.2	2083	0.5
605	2340	0.5	4423	1.0
616	594	0.1	5017	1.1
631	532	0.1	5549	1.2
632	10866	2.4	16415	3.6
633	25611	5.7	42026	9.3
634	752	0.2	42778	9.5
654	320	0.1	43098	9.6
655	8765	1.9	51863	11.5
656	2373	0.5	54236	12.0
657	309	0.1	54545	12.1
658	512	0.1	55057	12.2
659	369	0.1	55426	12.3
664	13	0.0	55439	12.3
667	160	0.0	55599	12.3
668	355	0.1	55954	12.4
669	59	0.0	56013	12.4
670	60	0.0	56073	12.4
676	149	0.0	56222	12.5
691	18745	4.2	74967	16.6
692	2981	0.7	77948	17.3
693	1452	0.3	79400	17.6
694	190	0.0	79590	17.7
721	7041	1.6	86631	19.2
723	3617	0.8	90248	20.0
724	4275	0.9	94523	21.0
736	463	0.1	94986	21.1

APG NUMBER	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
737	4501	1.0	99487	22.1
738	3226	0.7	102713	22.8
751	609	0.1	103322	22.9
752	17321	3.8	120643	26.8
753	3528	0.8	124171	27.5
754	6852	1.5	131023	29.1
766	469	0.1	131492	29.2
767	25834	5.7	157326	34.9
768	21612	4.8	178938	39.7
769	4066	0.9	183004	40.6
771	2777	0.6	185781	41.2
772	3481	0.8	189262	42.0
781	5701	1.3	194963	43.3
782	2034	0.5	196997	43.7
783	1487	0.3	198484	44.0
784	1471	0.3	199955	44.4
796	1387	0.3	201342	44.7
797	10208	2.3	211550	46.9
800	4124	0.9	215674	47.8
811	5586	1.2	221260	49.1
812	1352	0.3	222612	49.4
813	124[illegible]	0.3	223853	49.7
814	970	0.2	224823	49.9
816	1682	0.4	226505	50.2
817	8992	2.0	235497	52.2
827	118	0.0	235615	52.3
841	9223	2.0	244838	54.3
842	41893	9.3	286731	63.6
856	2494	0.6	289225	64.2
857	120	0.0	289345	64.2
858	3464	0.8	292809	65.0
859	1999	0.4	294808	65.4

APG NUMBER	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
860	26553	5.9	321361	71.3
871	3148	0.7	324509	72.0
872	2925	0.6	327434	72.6
873	2922	0.6	330356	73.3
886	3746	0.8	334102	74.1
887	236	0.1	334338	74.2
888	4260	0.9	338598	75.1
901	952	0.2	339550	75.3
902	3165	0.7	342715	76.0
916	18266	4.1	360981	80.1
933	1967	0.4	362948	80.5
946	31447	7.0	394395	87.5
947	3781	0.8	398176	88.3
948	22067	4.9	420243	93.2
949	3527	0.8	423770	94.0
950	2579	0.6	426349	94.6
951	17145	3.8	443494	98.4
959	4728	1.0	448222	99.4
999	2552	0.6	450774	100.0

TABLE 16 **Frequency Distribution of Medical APGs in Descending Order of Occurrence**

(N = 450,774)

APG	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
842	41893	9.3	41893	9.3
946	31447	7.0	73340	16.3
860	26553	5.9	99893	22.2
767	25834	5.7	125727	27.9
633	25611	5.7	151338	33.6
948	22067	4.9	173405	38.5
768	21612	4.8	195017	43.3
691	18745	4.2	213762	47.4
916	18266	4.1	232028	51.5
752	17321	3.8	249349	55.3
951	17145	3.8	266494	59.1
632	10866	2.4	277360	61.5
797	10208	2.3	287568	63.8
841	9223	2.0	296791	65.8
817	8992	2.0	305783	67.8
655	8765	1.9	314548	69.8
721	7041	1.6	321589	71.3
754	6852	1.5	328441	72.9
781	5701	1.3	334142	74.1
811	5586	1.2	339728	75.4
959	4728	1.0	344456	76.4
737	4501	1.0	348957	77.4
724	4275	0.9	353232	78.4
888	4260	0.9	357492	79.3
800	4124	0.9	361616	80.2
769	4066	0.9	365682	81.1
947	3781	0.8	369463	82.0
886	3746	0.8	373209	82.8
723	3617	0.8	376826	83.6

APG	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
753	3528	0.8	380354	84.4
949	3527	0.8	383881	85.2
772	3481	0.8	387362	85.9
858	3464	0.8	390826	86.7
738	3226	0.7	394052	87.4
902	3165	0.7	397217	88.1
871	3148	0.7	400365	88.8
692	2981	0.7	403346	89.5
872	2925	0.6	406271	90.1
873	2922	0.6	409193	90.8
771	2777	0.6	411970	91.4
950	2579	0.6	414549	92.0
999 *	2552	0.6	417101	92.5
856	2494	0.6	419595	93.1
656	2373	0.5	421968	93.6
605	2340	0.5	424308	94.1
782	2034	0.5	426342	94.6
859	1999	0.4	428341	95.0
933	1967	0.4	430308	95.5
816	1682	0.4	431990	95.8
783	1487	0.3	433477	96.2
784	1471	0.3	434948	96.5
693	1452	0.3	436400	96.8
796	1387	0.3	437787	97.1
812	1352	0.3	439139	97.4
313	1241	0.3	440380	97.7
604	1104	0.2	441484	97.9
814	970	0.2	442454	98.2
901	952	0.2	443406	98.4
634	752	0.2	444158	98.5
751	609	0.1	444767	98.7
616	595	0.1	445361	98.8

APG	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
631	532	0.1	445893	98.9
658	512	0.1	446405	99.0
766	469	0.1	446874	99.1
736	463	0.1	447337	99.2
602	402	0.1	447739	99.3
659	369	0.1	448108	99.4
668	355	0.1	448463	99.5
654	320	0.1	448783	99.6
603	310	0.1	449093	99.6
657	309	0.1	449402	99.7
601	267	0.1	449669	99.8
887	236	0.1	449905	99.8
694	190	0.0	450095	99.8
667	160	0.0	450255	99.9
676	149	0.0	450404	99.9
857	120	0.0	450524	99.9
827	118	0.0	450642	100.00
670	60	0.0	450702	100.00
669	59	0.0	450761	100.00
664	13	0.0	450774	100.00

* Includes APG 999 (Error APG)

TABLE 17 Number and Percent of Visits Assigned to APGs in Ranges

Number of Visits Assigned to an APG (Ranges)	APGs in Range		Visits in Range	
	Number	Percent	Number	Percent
1-100	3	3.75	132	.0003
101-1000	22	27.50	9158	2.1
1001-5000	35	43.75	99204	22.1
5001-10000	7	8.75	52160	11.6
10001-20000	6	7.50	92551	20.7
20000 +	7	8.75	195017	15.27
TOTAL	80	100.00	448222	100.00

Medical APGs Analysis

The four costing methodologies were applied to the Medical APGs to allow analyses on the effectiveness of the grouper as a resource allocator. A General Linear Model (GLM) was run on the APG grouper using the four different cost methodologies. In order to reduce the effect of group size, those APGs with less than 30 visits were deleted. Additionally, the visits in the error APG 999 (2,552) were also deleted from the analyses. Based on these criteria only the 13 visits of APG 664 (Comprehensive Therapy for Drug Abuse With Mental Illness) were excluded from the analysis. Discussion of the differences will focus on (a) the F-ratio[1] and (b) the R-square[2]. R-square is always between 0 and 1.0. The closer to 1.0, the more variance that is explained. It is important to remember that the APG algorithm uses variables such as age, gender, diagnosis, procedure, etc., to group data concerning patient care. Costs were attached to each visit after the grouping has been completed. Subgroup means, minimums,

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[1] The ratio between group variance divided by the within group variance, the higher the ratio the more difference in cost between subgroups, compared to the variability within a specific group.

[2] The amount of variance explained (how much of the total variability in cost is accounted for) by the model.

maximums, etc., were then computed and used in the analysis. The examinations essentially indicate how effectively the APG grouper, designed with clinical relevance as the primary criterion, allocates resources. The amount of variance explained and the F-ratio values are a function of the interaction between the grouper and the cost formulas. This is extremely important since some cost formulas may attach costs to visits which have a greater variability than others. For example, COST1 has greater variability than COST2 which has a minimum cost per visit, thereby establishing an artificial floor. This reduces the range of costs and therefore the variability of COST2.

The results of the GLM using the APG grouper with the four cost methodologies is presented in Table 18. The grouper is most effective (accounts for the most variance) when using COST2, all CHAMPUS rates, and is least effective when using COST1, the combination of actual and computed military costs. However, all the R^2 are low.

TABLE 18 General Linear Model Summary for Medical APGs

N = 448,209

COST #	COST FORMULA	F-RATIO	R-SQUARE
COST1	FACCOMP + X-RAY + ANCILLARY + LAB + RX + LABOR	580.76	.0918
COST2	PROCEDURE + X-RAY + ANCILLARY (ALL CHAMPUS W/MINIMUM COST BASED ON TIME)	1084.15	.1587
COST3	LABOR	698.62	.1084
COST4	0.055 CLEMAN + X-RAY + ANCILLARY + LAB + RX	692.20	.1075

Additional Analyses

Based on previous research on Ambulatory Classification Systems for military health care (Georgoulakis et al., 1990; Georgoulakis, et al., 1992; Georgoulakis, Ellis-Billingsley, Guillen, & Bolling, 1993), the issue of the "normality" of medical visit data has been raised. To reduce the skewness of the data the developers of ambulatory classification reimbursement systems (Averill et. al., 1990; Cameron, 1990), have employed various trimming techniques. One of the most common techniques is to trim the data at two and three standard deviations from the mean. This reduces the effect of the outliers on the mean and increases the "normality" which is a requirement for the use of the GLM. As noted in Table 19, the effect of trimming the data at two and three standard deviations

not only increased the amount of variance explained by the model but affected the relative ranking of the cost formulas as well. For example, COST2, CHAMPUS Procedure Rate (which accounted for the most variance) increased the variance accounted for from .1587 using untrimmed data to .2731 when the data is trimmed at two standard deviations.

TABLE 19 Medical APGs General Linear Model Cost Analysis

COST FORMULAS	R-SQUARES	# TRIMMED VISITS
COST1	.0918	0
COST1 (3 SD)	.1132	2,267
COST1 (2 SD)	.1545	23,646
COST2	.1587	0
COST2 (3 SD)	.2230	4,577
COST2 (2 SD)	.2731	18,946
COST3	.1084	0
COST3 (3 SD)	.1476	4,045
COST3 (2 SD)	.2152	24,743
COST4	.1075	0
COST4 (3 SD)	.1278	2,535
COST4 (2 SD)	.1641	11,373

TABLE 20 Medical APGs General Linear Model Cost Analysis Logarithm Values

COST FORMULAS	R-SQUARES	# TRIMMED VISITS
LOGCOST1	.1051	0
LOGCOST1 (3 SD)	.1131	2,267
LOGCOST1 (2 SD)	.1369	23,646
LOGCOST2	.2127	0
LOGCOST2 (3 SD)	.2455	4,577
LOGCOST2 (2 SD)	.2719	18,946
LOGCOST3	.1336	0
LOGCOST3 (3 SD)	.1461	4,045
LOGCOST3 (3 SD)	.1757	24,743
LOGCOST4	.1150	0
LOGCOST4 (3 SD)	.1243	2,535
LOGCOST4 (2 SD)	.1427	11,373

A second method used to reduce the skewness of the data was accomplished through the use of the logarithm values and then trimming the data at two and three standard deviations. The use of the logarithm of values has been frequently used and is accepted as an appropriate method for reducing skewness (Murphy, Thomas, & Bolling, 1967; Snedecor & Cochran, 1971). The results of the analysis using logarithm transformations are contained in

Table 20. As noted in the table, the use of logarithmic values increases the amount of variance accounted for, but not to the extent observed from trimming the data without logarithmic transformation.

The third and final method used to reduce the effect of statistical outliers on the data was the "interquartile" method. Under this method, trim points are based on the difference between the 75th and 25th percentile of costs. The high trim point was computed as the 75th percentile of cost plus 2.5 times the interquartile range. The low trim point consisted of the 25th percentile of cost minus 0.5 times the interquartile range. This method parallels that used by 3M-HIS in its final APG report. As seen in Table 21, this method results in the highest R^2, COST3 accounts for the most variance, .256, while COST1 continues to account for the least variance, .176.

TABLE 21 Medical Ambulatory Patient Groups General Linear Model Trimmed by Interquartile Range of Costs

(N = 448,209)

COST FORMULA	R-SQUARES	NUMBER OF VISITS ELIMINATED	TOTAL NUMBER OF VISITS
COST1	0.1767	47,096	401,113
COST2	0.2544	13,795	434,414
COST3	0.2560	41,458	406,751
COST4	0.1684	31,517	416,692

Significant Procedure APGs Analysis

A "Significant Procedure" is defined as a procedure that is normally scheduled, constitutes the reason for the visit, and dominates the time and resources expended during the visit. Each significant procedure code is assigned to a Significant Procedure APG. When a patient receives multiple significant procedures during a single visit, he or she is assigned multiple Significant Procedure APGs. However, not all the APGs assigned may be used in the payment computation. The process of collapsing multiple related Significant Procedure APGs into a single APG is referred to as "significant procedure consolidation." When multiple unrelated Significant Procedures APGs are assigned, the first is reimbursed at 100% of the amount, the second at 40%, and the third and subsequent APGs at 20%. According to the APG Final Report, duplicate Significant Procedure APGs are not collapsed or discounted. However, according to the software package, duplicate Significant Procedure APGs are consolidated. Finally,

the APG software does not contain an algorithm to determine which of the Significant Procedures APGs in a visit are reimbursed at 100%, 40%. 20% and so on. Nor, does the software contain a program to reimburse the most "expensive" APG at 100%, second most expensive at 60%, and so on. The evaluation of the Significant Procedure APGs and the consolidation process is not possible without the information detailing the consolidation decision algorithm. However, an evaluation of the Significant Procedure APGs is possible if restricted to records that contain only a single significant procedure.

To accomplish this task, computer programs were written to screen for records that contained only a single significant procedure. However, since it was necessary to impute the 90000 code to get the APG grouper to run, many records which contained a significant procedure were also artificially assigned a medical visit. In order to eliminate the artificially assigned medical visits, a computer program was written to review the records. If there was a single significant procedure in the record with a medical visit, the medical visit was deleted. Since the APG algorithm first classifies on significant procedures, the rationale for this decision appeared sound. Employing this rationale, 41 of the 145 (28%) Significant Procedures APGs were evaluated. Table 22 contains a listing of the 41 Significant Procedure APGs which contained visits by APG number. Additionally, Table 23 contains a listing of the number of visits in each of the significant procedure APGs in descending order. As noted in Table 23, the largest number of visits (4,446) grouped in APG 054 (Physical Therapy). This would seem appropriate since both the active duty and the retiree population require a large number of these services. Additional Significant Procedure APGs which contained a large number of visits included APG 006, Simple Debridement and Destruction, (4,107 visits) and APG 318, Simple Audiometry, (2,943 visits). The large number of visits in these APGs seem appropriate given the population from which the data base was developed.

Similar to the method used in analyzing the medical APGs (trimming the data at 2 SD from the mean and performing a logarithmic transformation) an analysis using the four cost methodologies with the GLM was conducted. The results from this analysis is contained in Table 24. As depicted in the table, COST1 accounted for the most variance and COST2, the least.

TABLE 22 Significant Procedure APGs by APG Number

N = 41

NUMBER	APG NUMBER	VISITS	DESCRIPTION
1	001	92	Photochemotherapy
2	002	74	Superficial needle biopsy or aspirations
3	003	665	Simple incision and drainage
4	005	150	Debridement of nails
5	006	4107	Simple debridements and destructions
6	007	1111	Simple excisions and biopsies
7	008	703	Complex excisions, biopsies and debridements
8	010	1370	Simple skin repairs
9	011	36	Complex skin repairs
10	027	79	Simple incisions and excisions of breast
11	053	1219	Occupational therapy
12	054	4446	Physical therapy
13	057	1743	Replacements of casts
14	058	1502	Splints, strapping and cast removals
15	064	72	Simple maxillofacial procedures
16	065	73	Complex maxillofacial procedures
17	076	74	Arthrocentesis and ligament or tendon injections
18	077	237	Speech therapy
19	081	597	Simple endoscopy of upper airway
20	105	244	Exercise tolerance tests
21	136	247	Allergy tests and immunotherapy
22	160	419	Diagnostic proctosigmoidoscopy and anoscopy with biopsy
23	162	113	Diagnostic upper GI endoscopy
24	164	31	Diagnostic lower GI endoscopy
25	165	35	Therapeutic lower GI endoscopy
26	167	57	Tonsil and adenoid procedures
27	183	79	Simple urinary studies and procedures
28	185	33	Urinary catheterization and dilation
29	188	128	Simple cystourethroscopy
30	209	131	Testicular and epididymal procedures
31	212	51	Simple penile procedures

NUMBER	APG NUMBER	VISITS	DESCRIPTION
32	236	483	Procedures for pregnancy and neonatal care
33	242	35	Miscellaneous female reproductive procedures
34	261	204	Electroencephalogram
35	263	212	Nerve and muscle tests
36	266	146	Nerve injection and stimulation
37	288	80	Contact lenses
38	294	35	Simple anterior segment eye procedures
39	313	70	Otorhinolaryngologic function tests
40	318	2943	Simple audiometry
41	319	221	Remove impacted cerumen

TABLE 23 Significant Procedure APGs in Descending Order

N = 41

NUMBER	APG NUMBER	VISITS	DESCRIPTION
1	054	4446	Physical therapy
2	006	4106	Simple debridement and destructions
3	318	2943	Simple audiometry
4	057	1743	Replacements of casts
5	058	1502	Splints, strapping and cast removals
6	010	1370	Simple skin repairs
7	053	1219	Occupational therapy
8	007	1111	Simple excisions and biopsies
9	008	703	Complex excisions, biopsies and debridements
10	003	665	Simple incision and drainage
11	081	597	Simple endoscopy of upper airway
12	236	83	Procedures for pregnancy and neonatal care
13	419	160	Diagnostic proctosigmoidoscopy and anoscopy with biopsy
14	136	247	Allergy tests and immunotherapy
15	105	244	Exercise tolerance tests
16	077	237	Speech therapy
17	319	221	Remove impacted cerumen

NUMBER	APG NUMBER	VISITS	DESCRIPTION
18	263	212	Nerve and muscle tests
19	261	204	Electroencephalogram
20	005	150	Debridement of nails
21	266	146	Nerve injection and stimulation
22	209	131	Testicular and epididymal procedures
23	188	128	Simple cystourethroscopy
24	162	112	Diagnostic upper GI endoscopy
25	001	92	Photochemotherapy
26	288	80	Contact Lenses
27	027	79	Simple incisions and excisions of breast
28	183	79	Simple urinary studies and procedures
29	002	74	Superficial needle biopsy or aspirations
30	076	74	Arthrocentesis and Ligament or tendon injections
31	065	73	Complex maxillofacial procedures
32	064	72	Simple maxillofacial procedures
33	313	70	Otorhinolaryngologic function tests
34	167	57	Tonsil and adenoid procedures
35	212	51	Simple penile procedures
36	011	36	Complex skin repairs
37	165	35	Therapeutic lower GI endoscopy
38	242	35	Miscellaneous female reproductive procedures
39	294	35	Simple anterior segment eye procedures
40	185	33	Urinary catheterization and dilation
41	164	31	Diagnostic lower GI endoscopy

TABLE 24 General Linear Model Summary for Significant Procedure APGs Using Logarithmic Cost

N = 24,306

COST #	COST FORMULA	F-RATIO	R-SQUARE
COST1	FACCOMP + X-RAY + ANCILLARY + LAB + RX + LABOR	1119.68	0.4682
COST2	PROCEDURE + X-RAY + ANCILLARY (ALL CHAMPUS W/MINIMUM COST BASED ON TIME)	141.42	0.1887
COST3	LABOR	191.64	0.2397
COST4	0.055 CLEMAN + X-RAY + ANCILLARY + LAB + RX	174.12	0.2227

DISCUSSION

The purpose of this study was to evaluate the APGs for military implementation. A number of interesting and critical findings have resulted from this investigation.

First, as noted in previous reports, it cannot be over-emphasized that if the purpose of an ambulatory classification system for the military is the allocation of resources, the effectiveness of a "given" classification system is directly related to the methodology used to attach a "cost" to each visit.

Second, some classification systems work much better in terms of explaining cost variance with a particular cost methodology than do others. This is of particular importance to the military, since, at the present time the military, unlike the civilian community, is not fully capable of producing a "bill" or itemized list of "costs" for services provided during a visit. Until the military is able to produce such a bill, efforts toward direct comparisons with the civilian community for specific medical services will be severely hampered.

Third, all ambulatory classification systems use various combinations of procedures, diagnoses, and selected patient demographic information (i.e., age and gender) to divide visits into categories that utilize similar amounts of resources. It would, seem reasonable that for a classification system to be optimally effective as a "resource allocator" or "cost containment tool," it should be developed using a combination of clinical and cost variables simultaneously. This is best accomplished using an iterative process with inputs and outputs reviewed by both clinicians and comptroller/resource managers.

Fourth, the results of the study clearly provided a greater understanding of the ambulatory classification system most likely

to be selected for implementation by the HCFA. The use of a large data set which covered the spectrum of military-based hospital outpatient services, provided valuable insights to the complexities of implementing the system in a military environment.

A fifth area that merits discussion concerns the inclusion of nonphysician health care providers in an ambulatory classification algorithm. The system reviewed in this study is based on CPT and expanded HCFA Common Procedure Coding System (HCPCS) codes. These codes were developed primarily for physician services. This is a serious concern to the military where an extensive network of nonphysician providers has been developed. Any classification system intended for military use will need to have provisions for nonphysician health care providers. This provision could be made through the use of expanded CPT-4 codes, modification and utilization of HCPCS codes, or through the development of a system of military procedure codes which could be rolled up into either of the aforementioned conventions.

Sixth, some of the innovations advanced by the APG system are more theoretical than empirical. For example, the concepts of consolidation and discounting are interesting, but research to support these concepts is lacking.

Seventh, the developers of the APGs utilized well-defined trim points to eliminate extreme values from the computation of the average APG charge. This process reduces the impact of extreme charges (outliers) on the average cost. The trimming procedure selected utilized the interquartile range of charges. The interquartile range is the difference between the 75th and the 25th percentile of charges. The high trim point (high cost) was computed at the 75th percentile of charges, plus 2.5 times the interquartile range. The low trim point (low cost) was computed as the 25th percentile of charges minus 0.5 times the interquartile range. For significant procedure and medical patients, visits with charges outside the trim points were eliminated (e.g., not utilized to compute the average cost of the visit).

The therapy APGs employed a different trimming method. The high trim for the therapy APGs was computed as the 25th percentile of charges, plus one half the value of the 25th percentile. The low trim was computed as the 25th percentile of charges minus one half the value of the 25th percentile. Additional trimming procedures were used for multiple non-consolidated significant procedures and ancillary procedures. Despite the various trimming procedures, the developers of the APGs report that the percentage of patients trimmed, either low or high, for any APG, never exceeded 12%. However, the developers caution that any results from the analysis of the therapy claims will be preliminary until more accurate data

becomes available (Averill et al., 1991). The use of various trimming methods employed by 3M-HIS presented a number of problems to the study team. The most significant was represented by the difficulty in comparing the APG system to other systems that employed more conventional trimming methods.

The APG system provides flexibility in rank ordering the significant procedures in a visit, and to some extent in the bundling and consolidation of services. Unfortunately, this flexibility hampers evaluation as there is no standardized algorithm to evaluate. Therefore, only the Medical APGs and Significant Procedures not occurring in combinations were evaluated. This resulted in a less comprehensive evaluation than was initially planned by the study team.

Finally, there are serious drawbacks to the implementation of the APGs in a military environment because there are no inflated charges to offset the losses incurred by the concepts of consolidation and bundling. Facilities will be penalized for providing more than one procedure per visit. This may create an incentive to schedule procedures on different visits so that the facility would be reimbursed for services rendered. This would not be in the best interest of the patient nor improve the system.

RECOMMENDATIONS AND CONCLUSIONS

The results of the study provided a greater understanding of the APGs as they apply to the military especially when using a large data base which covers the spectrum of military-based hospital outpatient services. At this juncture, it appears that if the military is to comply with the Congressional Mandate by 1 October 1995, which directed the Secretary of Defense to establish by regulation the use of outpatient DRGs as primary criteria for allocation of resources for DOD MTFs, much work needs to be undertaken. More specifically, the following must be accomplished:

1. A financially sound cost methodology must be developed. This methodology must account for as many of the factors related to the providing of health care as possible.

2. The Department of Defense must realize that it will not be possible to take "off the shelf" the APGs or other ambulatory classification system and to implement it throughout the medical system, without major modifications.

3. Since the APGs focus on physician services, it would be prudent for the military to initiate, as soon as possible, the development or modification of an ambulatory classification system, which would incorporate non-physician health care providers.

4. Prior to implementation in either the civilian or military community, the APGs will require modifications in the clinical structure of some of the groups. Additional modifications are called for in the software. Finally, the concepts of bundling, consolidation, and discounting require additional research.

CONCLUDING NOTES

Limitations of the Study

Data

The sample for this study consisted of 516,006 randomly selected outpatient visits from the ACDB data base (Georgoulakis et al., 1988). The data has a high degree of alternate (equivalent) forms' reliability (e.g., Army Medical Department SF 600 and ACDB data collection forms). Unfortunately, the validity of the data is limited to content and face. However, since the providers themselves developed the "clinical" sections and there was no incentive or benefit in "gaming" the system (up-coding the diagnosis or procedure), there is no reason to suspect the validity of the data collected. Therefore, based on the randomness and size of the sample, the demonstrated reliability, and the face and content validity of the data, the study team concluded that the data used in the study was representative of care provided throughout the Army medical department.

Statistical Procedures

There are a number of statistical procedures that can be utilized to evaluate the relationship between groups, or to account for different types of variances. The analysis of variance (ANOVA) has been the statistical procedure that has been utilized by most ambulatory classification system developers to compare the means of the groups created by the classification system. The ANOVA enables the researcher to measure the magnitude of the heterogeneity (between) and homogeneity (within) group variance as well as the total amount of variance accounted for by the model. The ANOVA is most robust when applied according to the assumptions underlying the use of the procedure. Briefly, these assumptions include (a) the sample is randomly drawn, (b) the dependent measure is normally distributed in the population, (c) the compared populations have equal variances, and (d) the groups are of equal size (subjects). In well-designed experimental studies, these assumptions can be satisfied. However, in "real world" studies, these assumptions are rarely met.

The statistical procedure used in this study was the General Linear Model contained in the SAS®. The GLM is similar to the ANOVA with the exception of being more robust with unbalanced groups. As the groups generated by the APG classification system were unequal, ranging from a few visits to many thousand within a group, the assumptions for an ANOVA procedure are not met in this study. Thus, the use of the GLM should provide a more accurate measure of the homogeneity, heterogeneity, and variance accounted for by the model than the ANOVA.

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APPENDICES

APPENDIX A

SIGNIFICANT PROCEDURE APGs

APG NUMBER	DESCRIPTION
	SKIN, SUBCUTANEOUS TISSUE AND MUSCLE
1	Photochemotherapy
2	Superficial Needle Biopsy and Aspiration
3	Simple Incision and Drainage
4	Complex Incision and Drainage
5	Debridement of Nails
6	Simple Debridement and Destruction
7	Simple Excision and Biopsy
8	Complex Excision, Biopsy and Debridement
9	Lipectomy and Excision with Reconstruction
10	Simple Skin Repair
11	Complex Skin Repair
12	Skin and Integument Graft, Transfer and Rearrangement
	BREAST
27	Simple Incision and Excision of Breast
28	Breast Reconstruction and Mastectomy
	BONE, JOINT AND TENDON
53	Occupational Therapy
54	Physical Therapy
55	Diagnostic Arthroscopy
56	Therapeutic Arthroscopy
57	Replacement of Cast
58	Splint, Strapping and Cast Removal
59	Treatment of Closed Fracture & Dislocation of Finger, Toe & Rib
60	Treatment of Closed Fracture & Dislocation Except Finger, Toe & Rib
62	Treatment of Open Fracture and Dislocation Except Face
63	Joint Manipulation Under Anesthesia
64	Simple Maxillofacial Procedures
65	Complex Maxillofacial Procedures
66	Incision of Bone, Joint and Tendon
67	Bunion Procedures
68	Excision of bone, Joint and Tendon of The Hand and Foot
69	Excision of Bone, Joint & Tendon Except Hand & Foot
70	Arthroplasty

APPENDIX A: SIGNIFICANT PROCEDURE APGs (cont'd):

APG NUMBER	DESCRIPTION
	BONE, JOINT AND TENDON
71	Hand and Foot Tenotomy
72	Simple Hand and Foot Repair Except Tenotomy
73	Complex Hand and Foot Repair
74	Repair, Except Arthrotomy, of Bone, Joint, Tendon Except of Hand & Foot
75	Arthrotomy Except of Hand and Foot
76	Arthrocentesis and Ligament or Tendon Injection
77	Speech Therapy
	RESPIRATORY, MOUTH, NOSE AND THROAT
79	Pulmonary Test and Therapy Except Spirometry
80	Needle and Catheter Biopsy, Aspiration, Lavage and Intubation
81	Simple Endoscopy of the Upper Airway
82	Complex Endoscopy of the Upper Airway
83	Simple Endoscopy of the Lower Airway
84	Complex Endoscopy of the Lower Airway
85	Nasal Cauterization and Packing
86	Simple Lip, Mouth and Salivary Gland Procedures
87	Complex Lip, Mouth and Salivary Gland Procedures
88	Miscellaneous Sinus, Tracheal and Lung Procedures
	CARDIOVASCULAR
105	Exercise Tolerance Tests
106	Echocardiography
107	Phonocardiogram
108	Cardiac Electrophysiologic Tests
109	Vascular Cannulation with Needle and Catheter
110	Diagnostic Cardiac Catheterization
111	Angioplasty and Transcatheter Procedures
112	Pacemaker Insertion and Replacement
113	Removal and Revision of Pacemaker and Vascular Device
114	Minor Vascular Repair and Fistula Construction
115	Secondary Varicose Veins and Vascular Injection
116	Vascular Ligation
117	Cardiopulmonary Resuscitation and Intubation

APPENDIX A: SIGNIFICANT PROCEDURE APGs (cont'd):

APG NUMBER	DESCRIPTION
	HEMATOLOGIC, LYMPHATIC AND ENDOCRINE
131	Chemotherapy By Infusion
132	Chemotherapy Except By Infusion
133	Transfusion and Phlebotomy
	HEMATOLOGIC, LYMPHATIC AND ENDOCRINE
134	Blood and Blood Product Exchange
135	Deep Lymph Structure and Thyroid Procedures
136	Allergy Tests and Immunotherapy
	DIGESTIVE
157	Alimentary Tests and Simple Tube Placement
158	Esophageal Dilation without Endoscopy
159	Percutaneous and Other Simple Gastrointestinal Biopsy
160	Anoscopy with biopsy and Diagnostic Proctosigmoidoscopy
161	Proctosigmoidoscopy with Excision or Biopsy
	12 Diagnostic Upper Gastrointestinal Endoscopy
163	Therapeutic Upper Gastrointestinal Endoscopy
164	Diagnostic Lower Gastrointestinal Endoscopy
165	Therapeutic Lower Gastrointestinal Endoscopy
166	ERCP & Other Miscellaneous Gastrointestinal Endoscopy Procedures
167	Tonsil and Adenoid Procedures
168	Hernia and Hydrocele Procedures
169	Simple Hemorrhoid Procedures
170	Simple Anal and Rectal Procedures Except Hemorrhoid Procedures
171	Complex Anal and Rectal Procedures
172	Peritoneal procedures and Change of Intra-Abdominal Tube
173	Miscellaneous Digestive Procedures
	URINARY
183	Simple Urinary Studies and Procedures
184	Renal Extracorporeal Shock Wave Lithotripsy
185	Urinary Catheterization and Dilatation
186	Hemodialysis
187	Peritoneal Dialysis
188	Simple Cystourethroscopy
189	Complex Cystourethroscopy and Litholapaxy

APPENDIX A: SIGNIFICANT PROCEDURE APGs (cont'd):

APG NUMBER	DESCRIPTION
	URINARY
190	Percutaneous Renal Endoscopy, Catheterization & Ureteral Endoscopy
191	Cystotomy
192	Simple Urethral Procedures
193	Complex Urethral Procedures
	MALE REPRODUCTIVE
209	Testicular and Epididymal procedures
210	Insertion of Penile Prosthesis
211	Complex Penile Procedures
212	Simple Penile Procedures
213	Prostate Needle and Punch Biopsy
214	Transurethral Resection of Prostate & Other Prostate Procedures
	FEMALE REPRODUCTIVE
235	Artificial Fertilization
236	Procedures for Pregnancy and Neonatal Care
237	Treatment of Spontaneous Abortion
238	Therapeutic Abortion
239	Vaginal Delivery
240	Female Genital Endoscopy
241	Colposcopy
242	Miscellaneous Female Reproductive Procedures
243	Dilation and Curettage
244	Female Genital Excision and Repair
	NERVOUS
261	Electroencephalogram
262	Electroconvulsive Therapy
263	Nerve and Muscle Tests
264	Injection of Substance into Spinal Cord
265	Subdural and Subarachnoid Tap
266	Nerve Injection and Stimulation
267	Revision and Removal of Neurological Device
268	Neurostimulator and Ventricular Shunt Implantation
269	Carpal Tunnel Release
270	Nerve Repair and Destruction
271	Complex Nerve Repair
272	Spinal Tap

APPENDIX A: SIGNIFICANT PROCEDURE APGs (cont'd):

APG NUMBER	DESCRIPTION
	EYE
287	Minor Ophthalmological Tests and Procedures
288	Fitting of Contact Lenses
289	Simple Laser Eye Procedures
290	Complex Laser Eye Procedures
291	Cataract Procedures
292	Simple Anterior Segment Eye Procedures for Glaucoma
293	Complex Anterior Segment Eye Procedures for Glaucoma
294	Simple Anterior Segment Eye Procedures Except for Glaucoma
295	Moderate Anterior Segment Eye Procedures
296	Complex Anterior Segment Eye Procedures Except for Glaucoma
297	Simple Posterior Segment Eye Procedures
298	Complex Posterior Segment Eye Procedures
299	Strabismus and Muscle Eye Procedures
300	Simple Repair and Plastic Procedures of Eye
301	Complex Repair and Plastic Procedures of Eye
	EAR
133	Otorhinolaryngologic Function Tests
314	Major External Ear Procedures
315	Tympanostomy and Other Simple Middle Ear Procedures
316	Tympanoplasty and Other Complex Middle Ear Procedures
317	Inner Ear Procedures
318	Simple Audiometry
319	Removal of Impacted Cerumen

APPENDIX B

MEDICAL APGs

APG NUMBER	DESCRIPTION
	MALIGNANCY
601	Hematological Malignancy
602	Prostatic Malignancy
603	Lung Malignancy
604	Skin Malignancy
605	Malignancies Except Hematological, Prostatic, Lung and Skin
	POISONING
616	Poisoning
	TRAUMA
631	Head and Spine Injury
632	Burns, and Skin and Soft Tissue Injury
633	Fracture, Dislocation and Sprain
634	Other Injuries
	MENTAL DISEASES
654	Individual Supportive Treatment for Senility, Dementia & Mental Retardation
655	Psychotropic Medication Management and Brief Psychotherapy
656	Comprehensive Psychiatric Evaluation and Treatment Age > 17
657	Comprehensive Psychiatric Evaluation and Treatment Age 0-17
658	Family Psychotherapy
659	Group Psychotherapy
	ALCOHOL AND DRUG ABUSE
664	Comprehensive Therapy For Drug Abuse with Mental Illness
667	Comprehensive Therapy For Drug Abuse without Mental Illness
668	Medication Management and Brief Psychotherapy for Drug Abuse
669	Family Therapy For Drug Abuse
670	Group Therapy For Drug Abuse

APPENDIX B: MEDICAL APGs (cont'd):

APG NUMBER	DESCRIPTION
	NEONATE
676	Neonate and Congenital Anomaly
	PREGNANCY
691	Routine Prenatal Care
692	Maternal Antepartum Complication
693	Routine Postpartum Care
694	Maternal Postpartum Complication
	INFECTIOUS DISEASES
721	Systemic Infectious Disease
723	Sexually Transmitted Disease in Males
724	Sexually Transmitted Disease in Females
	NERVOUS DISEASES
736	TIA, CVA and Other Cerebrovascular Events
737	Headache
738	Central Nervous System Diseases Except TIA, CVA, and Headache
	EYE DISEASES
751	Cataracts
752	Refraction Disorder
753	Conjunctivitis and Other Simple External Eye Inflammation
754	Eye Disease Except Cataract, Refraction Disorder & Conjunctivitis
	EAR, NOSE, THROAT AND MOUTH DISEASES
766	Dental Disease
767	Acute Infectious Ear, Nose and Throat Disease Age > 17
768	Acute Infectious Ear, Nose and Throat Disease Age 0-17
769	Acute Noninfectious Ear, Nose and Throat Disease
771	Hearing Loss
772	Other Ear, Nose, Throat and Mouth Diseases

APPENDIX B: MEDICAL APGs (cont'd):

APG NUMBER	DESCRIPTION
	RESPIRATORY DISEASES
781	Emphysema, Chronic Bronchitis and Asthma Age > 17
782	Emphysema, Chronic Bronchitis and Asthma Age 0-17
783	Pneumonia
784	Respiratory Disease Except Emphysema, Chronic Bronchitis & Asthma
	CARDIOVASCULAR DISEASES
796	Congestive Heart Failure and Ischemic Heart Disease
797	Hypertension
800	Cardiovascular Disease Except Chf,ischemic Heart Disease & Hypertension
	DIGESTIVE DISEASES
811	Noninfectious Gastroenteritis
812	Ulcers, Gastritis and Esophagitis
813	Functional Gastrointestinal Disease and Irritable Bowel Syndrome
814	Hepatobiliary Disease
816	Hemorrhoids and Other Anal-Rectal Diseases
817	Other Gastrointestinal Diseases
	MAJOR SIGNS, SYMPTOMS AND FINDINGS
827	Major Signs, Symptoms and Findings
	MUSCULOSKELETAL DISEASES
841	Back Disorders
842	Musculoskeletal Diseases Except Back Disorders
	SKIN AND BREAST DISEASES
856	Disease of Nails
857	Chronic Skin Ulcer
858	Cellulitis, Impetigo and Lymphangitis
859	Breast Disease
860	Other Skin Diseases

APPENDIX B: MEDICAL APGs (cont'd):

APG NUMBER	DESCRIPTION
	ENDOCRINE, NUTRITIONAL AND METABOLIC DISEASES
871	Diabetes
872	Obesity
873	Endocrine, Nutritional & Metabolic Disease Except Diabetes & Obesity
	KIDNEY AND URINARY TRACT DISEASES
886	Urinary Tract Infection
887	Renal Failure
888	Urinary Disease Except Urinary Tract Infection & Renal Failure
	MALE REPRODUCTIVE DISEASES
901	Benign Prostatic Hypertrophy
902	Male Reproductive Diseases Except Benign Prostatic Hypertrophy
	FEMALE REPRODUCTIVE DISEASES
916	Female Gynecologic Disease
	IMMUNOLOGIC AND HEMATOLOGIC DISEASES
932	Aids Related Complex & HIV Infection with Complications
933	Other Immunologic and Hematologic Disease
	WELL CARE AN ADMINISTRATIVE
946	Adult Medical Examination
947	Well Child Care
948	Counseling
949	Contraception and Procreative Management
950	Repeat Prescription
951	Nonspecific Signs & Symptoms & Other Contacts with Health Services
959	Admitted Or Died
999	Error

APPENDIX C

LABORATORY APGs

APG NUMBER	DESCRIPTION
417	Tissue Typing
418	Human Tissue Culture
419	Simple Immunology Tests
420	Complex Immunology Tests
421	Simple Microbiology Tests
422	Complex Microbiology Tests
423	Simple Endocrinology Tests
424	Complex Endocrinology Tests
425	Basic Chemistry Tests
426	Simple Chemistry Tests
427	Complex Chemistry Tests
428	Multichannel Chemistry Tests
429	Simple Toxicology Tests
430	Complex Toxicology Tests
431	Urinalysis
432	Therapeutic Drug Monitoring
433	Radioimmunoassay Tests
434	Simple Clotting Tests
435	Complex Clotting Tests
436	Simple Hematology Tests
437	Complex Hematology Tests
439	Lithium Level Monitoring
440	Blood and Urine Dipstick Tests

APPENDIX D

RADIOLOGY APGs

APG NUMBER	DESCRIPTION
341	Simple Diagnostic Nuclear Medicine
342	Complex Diagnostic Nuclear Medicine
343	Therapeutic Nuclear Medicine by Injection
344	Radiation Therapy
345	Obstetrical Ultrasound
346	Diagnostic Ultrasound Except Obstetrical
347	Hyperthermia
348	Magnetic Resonance Imaging
349	Computerized Axial Tomography
350	Mammography
351	Plain Film
352	Fluoroscopy
353	Cerebral, Pulmonary, Cervical & Spinal Angiography
354	Venography of Extremity
355	Non-Cardiac, Non-Cerebral Vascular Radiology
356	Digestive Radiology
357	Urography and Genital Radiology
358	Arthrography
359	Myelography
360	Miscellaneous Radiology

APPENDIX E

ANCILLARY TESTS AND PROCEDURES APGs

APG NUMBER	DESCRIPTION
443	Spirometry and Respiratory Therapy
444	Infusion Therapy Except Chemotherapy
447	Cardiogram
449	Simple Immunization
450	Moderate Immunization
451	Complex Immunization
452	Minor Gynecological Procedures
454	Minor Doppler, ECG Monitoring & Ambulatory BP Monitoring Tests
455	Minor Ophthalmological Injection, Scraping and Tests
456	Vestibular Function Tests
457	Minor Urinary Tube Change
458	Simple Anoscopy
459	Biofeedback and Hypnotherapy
460	Provision of Vision Aids
461	Introduction of Needle and Catheter

APPENDIX F

INCIDENTAL PROCEDURES APGs

APG NUMBER	DESCRIPTION
469	Professional Service
470	Individual Psychotherapy
471	Group Psychotherapy
472	Psychotropic Medication Management
473	Comprehensive Psychiatric Evaluation and Treatment
474	Family Psychotherapy
475	Radiological Supervision and Interpretation Only
478	Therapeutic Radiology Planning and Device Construction

APPENDIX G

CHEMOTHERAPY DRUG APGs

APG NUMBER	DESCRIPTION
500	Class One Chemotherapy Drugs
501	Class Two Chemotherapy Drugs
502	Class Three Chemotherapy Drugs

APPENDIX H

ROUTE OF CHEMOTHERAPY

APG NUMBER	DESCRIPTION
131	Chemotherapy by Infusion
132	Chemotherapy except by Infusion

APPENDIX I

PATHOLOGY ANCILLARY SERVICE APGS

APG NUMBER	DESCRIPTION
391	Simple Pathology
392	Complex Pathology

APPENDIX J

ANESTHESIA APG

APG NUMBER	DESCRIPTION
365	Anesthesia

APPENDIX K

AMBULATORY CARE DATA BASE (ACDB)
EXTENDED PROCEDURE CODES WITH CONVERSIONS TO CPT-4

EXTCD	CPT-4	DESCRIPTION
00099	01800	Anesthesia (Intravenous/Local Regional)
02000	99155	Health Ed/Counsel, Health Promotion
02001	99155	Health Ed/Counsel, Hearing Conservation
02002	99155	Health Ed/Counsel, OH Program Orientation
02003	99155	Health Ed/Counsel, Radiation Protection
02004	99155	Health Ed/Counsel, Respiratory Protection
02005	99155	Health Ed/Counsel, Supervisor Orientation
02006	99155	Health Ed/Counsel, Toxic Hazard
02007	99155	Health Ed/Counsel, Vision Protection
02008	92551	Hearing Conservation, Reference Audiogram
02009	92551	Hearing Conservation, 90-Day Audiogram
02010	92551	Hearing Conservation, Follow-up 15 Hours
02011	92551	Hearing conservation, Follow-up 40 Hours
02012	92551	Hearing Conservation, Non-Job Related Audiogram
02013	92551	Hearing Conservation, Termination Audiogram
02014	90030	Hearing Conservation, Otoscopic Check
02015	92551	Hearing Conservation, Periodic Audiogram
02016	90010	Radiation Protection Program
02017	90010	Respiratory Protection Program
02018	90010	Injury, Medical Treatment
02019	90000	Injury, First Aid
02069	90030	Spectacle Procedure, New Order
02070	90030	Spectacle Procedure, Reorder
02071	92370	Spectacle Procedure, Repair/Adjustment/Dispensing
02072	92390	Type Spectacles Ordered, Aircrew
02073	92390	Type Spectacles Ordered, Safety
02074	92390	Type Spectacles Ordered, GM Inserts
02075	92390	Type Spectacles ordered, Tinted Lenses
02078	92391	Type Contact Lenses, Soft Lenses
02079	92391	Type Contact Lenses, EW
02080	92391	Type Contact Lenses, Hard Lenses
02081	92391	Type Contact Lenses, Gas Perm
02082	92391	Type Contact Lenses, Toric
02083	92391	Type Contact Lenses, Other
02105	90887	Collateral Contact
02400	90841	Therapy/Counseling, Individual, Social Work
02401	90847	Therapy, Marital/Couple, Social Work
02402	90847	Therapy, Family, Social Work
02403	90853	Therapy/Counseling, Group, Social Work
02404	90801	Interview, Evaluation
02407	90150	Visit, Home
02409	90899	Other I, SW
02410	90899	Other II, SW
02411	90899	Other III, SW
02420	90887	Collateral, Family Member (SW)
02421	90887	Collateral, Physician (SW)
02422	90887	Collateral, Nursing (SW)
02423	90887	Collateral, PAD (SW)
02424	90887	Collateral, VA (SW)
02425	90887	Collateral, JAG (SW)
02426	90887	Collateral, Civilian Agency (SW)
02427	90887	Collateral, Other Mil Med Facil (SW)
02428	90887	Collateral, ADAPCP (SW)

APPENDIX K: AMBULATORY CARE DATA BASE (ACDB) EXTENDED PROCEDURE CODES WITH CONVERSIONS TO CPT-4 (cont'd):

EXTCD	CPT-4	DESCRIPTION
02429	90887	Collateral, School (SW)
02430	90887	Collateral, Unit (SW)
02431	90887	Collateral, Court Appearance (SW)
02432	90887	Collateral, Other I (SW)
02433	90887	Collateral, Other II (SW)
02434	90887	Collateral, Other III (SW)
02435	90899	Investigative Process-FAP
02436	90847	Intervention w/One Family Member of Identified Patient
02437	90847	Intervention w/Two Family Members of Identified PNT
02438	90847	Intervention w/Three Family Member of Identified PNT
02439	90847	Intervention w/Four Family Members of Identified PNT
02440	90887	Collateral, ACS (SW)
02441	90887	Collateral, Law Enforcement (SW)
02442	90887	Collateral, Child Care Facility (SW)
02500	90841	Advice/Health Instruction
02502	90801	Assessment, Behavioral
02505	90841	Crisis Intervention
02506	90889	Diagnostic Formulation
02507	90889	Eval, Report Composite
02508	99199	Health Promotion
02509	90801	Interview, Psychology
02510	90887	Coordination, Medical
02511	90605	Consultation, Patient
02512	90830	Testing, Administration
02513	90830	Testing, Scoring
02514	90830	Testing, Interpretation
02515	90841	Therapy, Individual, Psychology
02516	90847	Therapy, Couple/Family, Psychology
02517	90853	Therapy, Group, Psychology
02519	90830	Exam Eval, ARMA
02520	90841	Exam Eval, Behavioral Medicine
02521	99080	Exam Eval, Clearance Admin
02522	99080	Exam Eval, Clearance Entry
02523	90801	Exam Eval, Clearance PRP
02524	90801	Exam Eval, Clearance Security
02526	90889	Disability Determination
02527	90825	Eval, Disability Rehabilitation
02528	90889	Eval, Educational
02529	90847	Eval, Family/Marital
02530	90889	Eval, Forensic
02531	90825	Eval, Functional Symptoms
02532	90801	History
02533	90889	Eval, Mental Status
02534	90841	Eval, Pre/Post Surgical
02536	90630	Treatment Recommendation/Outcome
02537	90600	Triage, Psychology
03000	90000	Screening Nutrition Assessment
03001	90000	Anthropometric Measurements
03002	90020	Comprehensive Nutrition Assessment
03003	90000	Skin Fold Caliper (AWCP)
03004	90050	Reassessment, Nutrition Status
03006	90040	Nutrition Follow-Up Evaluation
03009	90020	Nutrition Evaluation, Other
03010	90292	Discharge Planning
03011	90600	Nutrition History Consultation
03012	90010	Nonstandard Diet Calculation
03014	90000	Nutrient Intake Analysis-Limited

APPENDIX K: AMBULATORY CARE DATA BASE (ACDB) EXTENDED PROCEDURE CODES WITH CONVERSIONS TO CPT-4 (cont'd):

EXTCD	CPT-4	DESCRIPTION
03016	99156	Patient Related Team Conference
03019	90699	Nutrition Procedure, Other
03020	99078	NUTR Care Ed, Nutrition Thru Life Span
03021	99156	NUTR Care Ed, MOD-Consistency
03022	99078	NUTR Care Ed, MOD-Overweight
03023	99078	NUTR Care Ed, MOD-Diabetes/Reactive HYP
03024	99156	NUTR Care Ed, MOD-Disease of GI Tract
03025	99078	NUTR Care Ed, MOD-Hyperlipidemia/Hyperlipoproteinemia
03026	99156	NUTR Care Ed, MOD-Sodium
03027	99156	NUTR Care Ed, MOD-Protein
03028	99156	NUTR Care Ed, MOD-Renal
03029	99156	NUTR Care Ed, MOD-Diagnostic Procedures
03030	99156	NUTR Care Ed, MOD-PEDS/Adolescent Diseases
03031	99156	NUTR Care Ed, MOD-Vegetarianism
03032	99078	NUTR Care Ed, MOD-Physiological Stress
03033	99156	NUTR Care Ed, MOD-Underweight
03034	99078	NUTR Care Ed, MOD-Athletic Training
03035	99156	NUTR Care Ed, MOD-Other Mineral
03036	99156	NUTR Care Ed, MOD-Allergy
03037	99078	NUTR Care Ed, MOD-Overweight (AWCP)
03038	90215	Eval, Parenteral/Enteral Nutrition
03039	99156	NUTR Care Ed, Other
03040	99078	NUTR Care Ed, Fitness/Wellness
03049	99156	Counseling, Nutrition (CHN)
04000	97700	Eval, Self ADL
04001	97700	Eval, Self Care
04002	97700	Eval, Home/Work/School
04003	97700	Eval, Play/Leisure Ability
04004	95882	Eval, Social/Commo Skills
04005	95882	Eval, Psychological Skills
04006	95882	Eval, Cognitive Function
04011	95851	Eval, Range of Motion, Neuromuscular Status
04012	97720	Eval, Dexterity
04013	93890	Eval, Vascular Status
04014	97720	Eval, Strength
04015	97720	Eval, Corrdination, Neuromuscular
04016	97720	Eval, Endurance, Neuromuscular
04017	90030	Eval, Sensation, Neuromuscular
04018	97720	Eval, Tone, Movement & Control
04019	97720	Eval, Integration of Reflexes
04020	97720	Eval, Sensory Motor Development/Reflexes
04021	97720	Eval, Musculoskeletal Screening
04022	95831	MSE, Cervical
04023	95831	MSE, Thoracic
04024	95831	MSE, LS
04025	95831	MSE, Shoulder
04026	95831	MSE, Elbow
04027	95832	MSE, Wrist/Hand
04028	95831	MSE, Hip
04029	95831	MSE, Knee
04030	95831	MSE, Ankle
04031	95831	MSE, Foot
04032	95831	MSE, Prox UE
04033	95832	MSE, Distal UE
04034	95831	MSE, Prox LE
04035	95831	MSE, Distal LE
04050	97799	Eval, Other, OT

APPENDIX K: AMBULATORY CARE DATA BASE (ACDB) EXTENDED PROCEDURE CODES WITH CONVERSIONS TO CPT-4 (cont'd):

EXTCD	CPT-4	DESCRIPTION
04051	95882	Eval, Perceptual Status
04052	90774	Eval, Developmental Status
04053	97700	Prosthetic Checkout
04061	97540	Self Care, ADL/OCC PERF
04062	97540	Pre-Voc Assessment Training, ADL/OCC PERF
04063	97540	Home/Work/School Skill, ADL/OCC PERF
04064	97540	Play/Leisure Ability, ADL/OCC PERF
04071	97540	Awareness of Self, SOC Commo Skills
04072	97540	Coping Behavior/Adaptation, SOC Commo Skills
04073	97540	Listening Skills, SOC Commo Skills
04074	97540	Resumption of Roles, SOC Commo Skills
04075	97540	Self Control, SOC Commo Skills
04076	97540	Self Esteem, SOC Commo Skills
04077	97540	Self Expression, SOC Commo Skills
04078	97540	Self Identity, SOC Commo Skills
04079	97540	Sensitivity to Others
04081	97540	Orientation, COG Func
04082	97540	Sequencing, COG Func
04083	97540	Comprehension, COG Func
04084	97540	Conceptualization, COG Func
04085	97540	Visual Motor Perception Training, COG Func
04086	97540	Problem Solving Ability, COG Func
04087	97540	Visual/Auditory Memory, COG Func
04091	97530	Dexterity, Phys Func
04092	97530	Gross/Fine Motor Coordination, Phys Func
04093	90040	Edema Control, Phys Func
04094	97530	Range of Motion, Phys Func
04095	97530	Strength, Phys Func
04096	97530	Endurance, Phys Func
04097	97112	Sensation, Phys Func
04098	97112	Integrate Approp Reflexes, Phys Func
04099	97112	Develop Normal Tone, Movement, Control, Phys Func
04100	97114	Promote Adaptive Responses, Phys Func
04101	97112	Joint Protection Techniques, Phys Func
04102	97500	Orthotic Fabrication/Training, Phys Func
04103	97520	Prosthetic Training, Phys Func
04104	97112	Pain Reduction, Phys Func
04105	97112	Sensorimotor Development, Phys Func
04121	97540	Work Simplification/Energy Conservation
04122	97530	Infant Stimulation
04123	97540	Burn Protocol
04125	99078	Stress Management
04126	97540	Therapy, Work
04127	90040	Wound Management
04128	99078	Therapy, Group, (OT)
04129	97530	Physical Training/Reconditioning
04130	97799	Other Procedure (OT)
04131	99155	Ed/Consult, SIG Other
04132	90040	Re-evaluation (OT)
04133	99155	Oral-Motor Facilitation
04135	99155	CO-Therapy Teaching, SIG Other (PEDS Only)
04136	99155	Compensatory & Org Work Study Skills
04138	99155	Cardiac Risk Factor Instructions
06000	90010	Eval, Gen Burns
06001	90000	Eval, Sports Med
06002	90050	Eval, Amputee
06003	90040	Eval, Hand

APPENDIX K: AMBULATORY CARE DATA BASE (ACDB) EXTENDED PROCEDURE CODES WITH CONVERSIONS TO CPT-4 (cont'd):

EXTCD	CPT-4	DESCRIPTION
06004	90010	Scoliosis Clinic/Screening
06005	97700	Gait/Running Analysis
06006	97700	Eval, Assistive Device
06011	97010	ICE
06013	97118	Medcolator
06014	97128	Medcosonolator
06015	97012	Traction
06017	97014	Tens
06018	97018	Paraffin Bath
06019	97022	Whirlpool
06021	97124	Massage
06022	97126	Contrast Bath
06023	97110	Therapeutic Exercise
06024	97112	Neuromuscular Re-education
06025	97114	Functional Activities Training
06026	97116	Gait Training
06027	97260	Therapy, Manual
06028	97016	Jobst Pump
06029	97110	Tilt Table
06030	90060	Burn Care
06031	97139	Fluidtherapy
06032	90050	Rehabilitation, Cardiac
06033	97500	Splint Fabrication
06034	99155	Patient Education (PT)
06035	97240	Therapy, Pool
06037	97110	Pre Op Excercise Trng, Mastectomy
06038	97110	Pre Op Excercise Trng, Chest
06039	97110	Pre Op Excercise Trng, Knee
06040	97110	Pre Op Excercise Trng, Hip
06041	97110	Pre Op Excercise Trng, Foot and Ankle
06042	97110	Pre Op Excercise Trng, Shoulder
06043	97110	Pre Op Excercise Trng, Other
06044	97110	Pre and Post Partum Exercise Trng.
06045	97118	Facilitation/Inhibition Techs
06046	94667	Postural Drainage/Chest
06047	97139	Other Procedure (PT)
06048	97012	Traction and Hot pack (PT)
06049	97014	Tens and Hot Pack (PT)
06050	97128	Ice and Ultrasound (PT)
06051	97110	Ice and Exercise (PT)
06052	99078	Back Class (PT)
06054	99078	Ankle Class (PT)
06057	99078	Diabetic Class (PT)
06058	97128	Hot Pack and Ultrasound (PT)
06059	97118	Medcolator and Ice (PT)
06060	97118	Medcolator and Hot pack (PT)
06061	97010	Ice and Elevation (PT)
06062	97014	Tens and Ice (PT)
06063	97530	Post Op Knee Rehab (PT)
06064	97530	Post Op Mastectomy Rehab (PT)
06065	97530	Post Op General Rehab (PT)
06066	97118	Ultrasound, Ice and Exercise (PT)
06067	97128	Ultrasound, Hot Pack & Exercise (PT)
06068	97128	Ultrasnd, Hot Pack & Inter Cerv Trac (PT)
06070	97016	Jobst, Ice & Elevation (PT)
06071	97128	Ice & Medcosonolator (PT)
06072	97124	Ice & Manual Therapy (PT)

APPENDIX K: AMBULATORY CARE DATA BASE (ACDB) EXTENDED PROCEDURE CODES WITH CONVERSIONS TO CPT-4 (cont'd):

EXTCD	CPT-4	DESCRIPTION
06073	97128	Ice, Ultrasound & Manual Therapy (PT)
06074	97128	Ice, Medcosonolator & Manual Therapy (PT)
06075	97124	Hot Pack & Manual Therapy (PT)
06076	97128	Hot Pack, Medcosonolator & Man Ther (PT)
06077	97128	Hot Pack & Medcosonolator (PT)
06078	97022	Whirl Pool, Burn/Wound Care (PT)
06080	97520	Exercise & Gait/Prosthetic Trng (PT)
06081	97118	High Voltage Stimulation (PT)
06082	97118	Electrical Stimulation & Exercise (PT)
07000	87210	Exam Microscopic (Arthropod)
07001	83052	Screening, Sickle Cell
07002	86171	Screening, Rubella
07003	90753	Exam, Physical, (CHN)
07004	90774	Developmental Services
07005	90115	Evaluation, Home
07006	90000	Assessment, Health Needs
07007	90060	Wic Program
07008	90060	Complex Patient Coordination
07009	90160	Ostomy Care
07010	99155	Counseling, Breast Feeding
07011	99078	Counseling, Health Fitness
07012	97540	Counseling, ADL
07013	99155	Counseling, Post Partum
07014	99078	Counseling, Prenatal
07015	99155	Counseling, Newborn
07016	99155	Counseling, Premature Infant
07017	99155	Counseling, Family Planning
07018	99155	Counseling, Disease Specific
07019	99078	Counseling, Infectious Disease Prevention
07020	99155	Counseling, Foreign Travel
07021	90752	Pre-School Services
07030	99078	Clinic, Smoking
07035	99078	Clinic, STD
07040	99078	Clinic, Well Child
07050	99078	Clinic, Well Baby
07055	99078	Clinic, TB
07060	90760	INH Monitoring
07070	99155	Interview, STD Contact
07091	99155	Interview, Comm Dis Case
07092	99155	Interview, Comm Dis Contact
07093	99155	Interview, EPI Other
10004	10000	I & D, Cyst
10062	26011	I & D, Felon
10165	10660	Blister Care, Puncture, Debride, Disinfect, & Obervation
10181	10180	I & D, Wound
11005	11040	Debridement, Ulcer/Abscess
11044	11042	Debridement, Skin, Subcutaneous Tissue
11102	11100	Biopsy, Punch
11103	11000	Biopsy, Shave
11104	11100	Biopsy, Incisional
11205	11200	Excision, Lipoma
11407	11406	Scar Excision/Revision
11410	11401	Excision, Cyst
11411	11401	Excision, Lesion, Benign, Trunk/Extremity < 1.0 CM
11412	11403	Excision, Lesion, Benign, Trunk/Extremity > 2.0 CM
11429	11406	Excision, Neoplasm, Large

APPENDIX K: AMBULATORY CARE DATA BASE (ACDB) EXTENDED PROCEDURE CODES WITH CONVERSIONS TO CPT-4 (cont'd):

EXTCD	CPT-4	DESCRIPTION
11431	11421	Excision, Lesion, Scalp, Neck, Hands < 1.0 CM
11432	11423	Excision, Lesion, Scalp, Neck, Hands > 2.0 CM
11447	11441	Excision, Lesion, Face, Lids, Ears, Nose < 1.0 CM
11448	11443	Excision, Lesion, Face, Lids, Ears, Nose > 2.0 CM
11449	11443	Excision, Lesion, Benign, NOS (ENT)
11611	11601	Excision, Lesion, Malignant, Trunk/Extremity < 1.0 CM
11612	11603	Excision, Lesion, Malignant, Trunk/Extremity > 2.0 CM
11631	11621	Excision, Lesion, Malignant, Scalp, Neck, Hands < 1.0C
11632	11623	Excision, Lesion, Malignant, Scalp, Neck, Hands > 2.0C
11651	11641	Excision, Lesion, Mal, Face, Lids, Ears, Nose < 1.0 CM
11751	11740	Biopsy, Nail
11752	11750	Excision, Nail, Medial Border
11753	11750	Excision, Nail, Lateral Border
11902	11900	Injec, Intralesional, Corticosteroid
11903	11900	Injec, Intralesional, Antimetabolite
11998	77261	Grenz/Sup X-ray
12003	12001	Wound Repair & Simple DRSG
12008	12002	Wound Care, Local
12009	12011	Suture, Ear
12010	12011	Repair, Laceration, Eyelid
13149	13150	Repair, Laceration, Full Thickness
13164	13160	Secondary Closure, (DPC), Surgical Wound
13165	12020	Secondary Closure, Nonsurgical Wound
15040	15100	Graft, Skin
15777	15240	Autografts (Not Hair)
15786	15782	Dermabrasion, Tattoo
15792	15791	Acid Treatment
15793	15791	Chemical Peel
15827	15839	Scalp Reduction
15830	15240	Restoration, Eyebrow
17111	17110	Destruction Of Warts w/Canthrone
17112	17110	Destruction Of Warts w/Podophyllum
17203	11641	Electrosurgery, Basal Cell Excision
17210	17200	Electrocoagulation/Destruction
17308	17307	Chemosurgery, Stage V
17381	11401	Laser Therapy, Excision
17382	17100	Laser Therapy, Vascular
17383	17110	Laser Therapy, Verruca
17385	17000	Laser Therapy, Other
19121	19120	Excision, Cyst, Breast, Fibroadenoma (Other Benign)
19122	19120	Excision, Cyst, Breast, Benign
19369	19371	Mammary Capsulotomy (Closed)
20221	20225	Biopsy, Leg Thru Tibia & Fibula
20551	90782	Injec, Soft Tissue
20555	97118	Trigger Point Stimulation
20601	20610	Aspiration, Joint (Arthocentesis)
20602	20610	Injec, Intra-Articular
20664	20665	Halo Adjustment
20685	20650	Other Orthosis Application/Adjustment
27195	97260	Manipulation, Pelvis
27197	97260	Manipulation, Spine
27199	97260	Manipulation, Not Spine/Pelvis
28301	28119	Retrocalcaneal Exostosectomy
28303	28300	Osteotomy
28450	28455	TTT, FX, Tarsal, Closed
28517	28515	TTT, FX, Toe
28650	27762	Fracture Manipulation and Immobilization, NOS

APPENDIX K: AMBULATORY CARE DATA BASE (ACDB) EXTENDED PROCEDURE CODES WITH CONVERSIONS TO CPT-4 (cont'd):

EXTCD	CPT-4	DESCRIPTION
29001	29799	Cast Application
29100	29799	Splint Application
29456	29450	Cast Application, Post Amputation
29501	99070	Post Op Shoe
29502	29515	Posterior Splint, Foot & Ankle
29503	29515	Slipper Cast
29790	90040	Plaster Foot Impression
29800	29425	Cast, Removal/Repair, Reapplication
29801	29425	Cast, Primary Application
29802	29425	Cast, Secondary or Tertiary Application
30010	89100	Levin Tube
30121	30120	Electrosurgery, Rhinophyma Malignant
30940	92511	Antroscopy, Nasal
31501	31500	Endotracheal Intubation, Nasal
31545	31540	Laryngoscopy, Direct, Operative w/Laser
31654	31659	Bronchoscopy Diag w/Bronchoalveolar Lavage
31658	31659	Bronchoscopy Diag w/Needle Asp, Carinal/Paratracheal NOD
32001	32000	Thoracentesis, Therapeutic w/Drainage
36432	36430	Transfusion, RBC
36433	36430	Transfusion, Immunoglobulin
36434	36430	Transfusion, Platelets
36435	36430	Transfusion, Factor Replacement
36436	36440	Transfusion, Blood, Pediatrics
36481	36480	Catheter Placement, Subclavian
36801	36800	Vascular Access placement, Chronic Pediatric Hemodialysi
42822	42821	Tonsillectomy & Adenoidectomy (T&A)
42832	42831	Adenoidectomy, Primary
43261	43260	Duodenoscopy w/Contrast Injec, Both Pancreatic, Bile Duct
43265	43268	Duodenoscopy w/Cannulation of Ampulla of Vater
43452	43450	Esophageal Dilation w/Mercury Weighted Bougie(S)
45373	45370	Colonoscopy, Beyond 25CM, Below Splen Flex w/Polypectomy
45387	4585	Colonoscopy, Beyond Splenic Flexure w/Polypectomy, Multip
45989	90030	Exam, Digital Of Rectum
49304	49301	Laparoscopy w/Liver Biopsy
50701	50951	Ureteral Dilatation
51721	51700	DMSO Bladder Installations
51794	52000	Cystoscopy
52004	52005	Cystourethroscopy, Ureteral Catheterization (Unilat)
53680	53670	Foley Catheter Care
54500	54505	Biopsy, Testis (Open)
58340	74741	Hysterosalpingogram
58993	89300	Post Coital Test
59001	59000	Amniocentesis, Genetic
59002	59000	Amniocentesis, Pulmonary Maturity
59040	59420	External Cephalic Version
59423	80055	Antepartum Testing, Biophysical Profile
59450	59420	Labor Check
62275	62279	Differential Epidural
62281	62280	Phenol Block
62283	62282	Neurolytic Lumbar Sympathetic
64444	64442	Injec, Lumbar Facet
64451	64450	Post Tib Nerve Block

APPENDIX K: AMBULATORY CARE DATA BASE (ACDB) EXTENDED PROCEDURE CODES WITH CONVERSIONS TO CPT-4 (cont'd):

EXTCD	CPT-4	DESCRIPTION
64452	64450	Ankle Nerve Block
64453	64450	Wrist Nerve Block
64454	64450	Digital Nerve Block
64460	64680	Neurolytic Celiac
64461	64640	Peripheral Neurolytic
64485	62278	Epidural Catheter Placement
64512	64450	Sympathetic Bier Block
65223	65222	Corneal Stain
65224	65205	Foreign Body Removal (Eye)
65780	90030	Keratometry
66683	66720	Ciliary Body Cryotherapy
66763	66762	Photocoagulation, Anterior Segment
67105	67226	Photocoagulation, Retina
67851	67850	Destruction, Lid Lesion
68111	68135	Removal of Lesion Of Conjunctiva
69212	69210	Irrigation, Ear
69600	13152	Revision, Previous Surgery, Ear
71031	90030	Interpretation, Chest-X-Ray (2 Views)
71251	90040	Interpretation Of Chest CT
74416	74415	Flat Tomogram, Kidney, Plain
74427	74426	Antegrade Urethrogram
74428	74426	Antegrade Nephrostogram
74453	74451	Retrograde Urethrogram
74482	74000	Kub
76105	76100	Interpretain, Tomography, Sing, Plane, Body, Section, Not Kid
76516	76511	Ultrasonography, A-Scan
76517	76512	Ultrasonography, B-Scan
78405	78499	Muga, Interpretation Only
78589	90040	Interpretation, Ventilation/Perfusion Scan
78598	90040	Interpretation, Gallium Scans
81001	81002	Urinalysis (Dip Stick)
82999	82996	Gonadotropin Reduction Test
84998	82383	Clonidine Suppression Test
86402	95030	Precipitin Determination
86456	86455	Anergy, Screen Result, Reading
86581	86585	TB Test, Tine (Admin)
86582	90030	TB Test (Read)
87073	87070	Culture, Cervix
87074	87070	Culture, Urethra
87204	87205	Vaginal Smear
87215	87210	Wet Mount (For OVA, Parasites, Bacteria Fungi) and KOH
87989	87207	Tzanck Stain
89101	89105	Duodenal Entubation & Aspiration, Secretin Test
89191	88161	Nasal Cytology
89321	87070	Expressed Prostatic Secretion
90002	90030	Suture Removal
90006	90050	Exam, Complaint Specific F/U
90007	90000	ACE Bandage Application
90008	90015	Evaluation, Initial
90009	90010	Exam, Complaint Specific Med.
90011	90040	Dressing Change
90012	90017	History/Exam Initial OB
90013	90000	Exam, Breast
90014	92551	Screening Hearing
90016	90010	Exam, Eye, Limited
90018	90015	Observation & Examination

APPENDIX K: AMBULATORY CARE DATA BASE (ACDB) EXTENDED PROCEDURE CODES WITH CONVERSIONS TO CPT-4 (cont'd):

EXTCD	CPT-4	DESCRIPTION
90019	90040	Exam, Return to Work
90021	99155	Diabetic Teaching (Extended Services)
90024	90015	Exam, General Medical
90025	90015	Exam, Pelvic/Pap Smear
90026	90010	Exam, Physical, Partial, OB-GYN
90027	90017	Exam, Physical, Complete, OB-GYN
90028	90015	Exam, Physical MED
90029	90000	Exam, Screening Medical
90031	90030	Medications Adjustment
90032	90010	Exam, Pelvic
90033	90000	History, No Exam
90034	90010	Exam, General Medical, Partial
90042	92557	Exam, Hearing
90043	90010	Exam, Vision
90055	90060	Follow-up Evaluation
90061	90000	Diabetic Routine Foot Care
90081	90750	Exam, Flight 1/1A
90083	90750	Exam, Flight, Class 2 and 3 Type B
90084	90760	Exam, Flight, Interim, Class 2 and 3/FAA 3
90085	90750	Exam, Physical, Military (Incl Retirement)
90201	92002	Low Vision, Evaluation
90202	92012	Low Vision, Follow-up, Evaluation
90203	92392	Low Vision, Consulation/Dispensing
90601	99014	Telephone Consult (Documented)
90635	90010	Eval, Pretreatment, Patient
90650	90600	Consultation, Limited
90652	90630	Consultation, Extensive
90655	90605	Consultation, Derm Path
90698	90799	Injec, Other (IM/IV)
90700	99080	Shot Record Review
90710	90724	IMM, Small Pox
90711	90724	IMM, Hemophilus Influenza B
90720	90749	Immunizations
90721	90724	IMM, Smallpox
90722	90799	Unlisted Therapeutic Injection
90723	90724	IMM, Adenovirus
90743	90742	Immune Serum Globulin (ISG), HEP B
90744	90742	Immune Serum Globulin (ISG), HEP Human Rabies
90745	90782	Injection/Observation
9076	90742	Immune Serum Globulin (ISG), HEP Tetanus
90747	90742	Immune Serum Globulin (IS), HEP Varicella Zoster
90765	90020	EFMP Assessment
90766	90015	EFMP Evaluation
90767	90060	EFMP Therapy
90768	99080	EFMP Coding
90769	90782	Admin of HCG-Testosterone
90770	36000	IV Admin, Diagnostic Materials
90771	62288	Injec, Intrathecal Steroid
90772	90782	Injec, Celestone
90780	90782	Injec, Anes & Steroid
90783	90782	Injec, Intramuscular, Corticosteroid
90785	90782	Injec, Desferal
90786	90784	Injec, Imferon
90787	90784	Injec, Morphine
90789	90782	Injec, Aristocort
90790	96500	Chemotherapy

APPENDIX K: AMBULATORY CARE DATA BASE (ACDB) EXTENDED PROCEDURE CODES WITH CONVERSIONS TO CPT-4 (cont'd):

EXTCD	CPT-4	DESCRIPTION
90791	90782	Injec, Depo-Testosterone (100MG)
90792	90782	Injec, Delatestryl
90793	90782	Injec, Kenalog
90794	90782	Injec, Marcaine
90795	90782	Injec, Vitamin B12
90796	90782	Injec, Xylocaine
90797	90784	Injec, Amphotericin
90802	90825	Eval, Admin, Psychiatric
90848	90847	Therapy, Marital/Couple, Psychiatric
90849	90853	Therapy, Group, Psychiatric
90931	90050	Medications Adjustment
90960	90957	Hemodialysis, Chronic, Pediatric, Uncomplicated
90961	90957	Hemodialysis, Chronic, Pediatric, Complicated
90962	90955	Hemodialysis, Chronic, Uncomplicated
90963	90955	Hemodialysis, Chronic, Complicated
90966	49080	Peritoneal Lavage
90970	90982	Peritoneal Dialysis, Chronic, Intermittant, Complicated
90971	90982	Peritoneal Dialysis, Chronic, Intermittant, Uncomplicated
90972	90984	Peritoneal Dialysis, Chronic, Pediatric, Complicated
90973	90984	Peritoneal Dialysis, Chronic, Pediatric, Uncomplicated
90974	90994	Peritoneal Dialysis, Continuous, Ambulatory
90975	90994	Peritoneal Dialysis, Continuous, Cycling
90995	90990	Technique Evaluation, Dialysis
91012	91010	Esophageal Motility Study
91053	91052	Gastric Analysis w/Sham Feeding
92001	92002	Exam, Eye, Triage
92003	90010	Exam, Visual Acuity
92005	90000	Irrigation, Eye
92061	92280	Potential Acuity Meter
92066	92065	Binocular Vision Training, Follow-up
92067	92065	Binocular Vision Training, Session
92085	92083	Perimetry, Automated
92086	92081	Perimetry, Tangent Screen
92227	92225	Biomicroscopy (Slit Lamp)
92231	92225	Opthalmoscopy, Indirect
92276	92002	Evaluation, Laser (Occupational Vision)
92277	92002	Evaluation, Microwave (Occupational Vision)
92278	92002	Evaluation, Depth Perception
92281	92002	Exam Safety Spectacle (Occupational Vision)
92282	92002	Contrast Sensitivity
92283	92002	Color Vision Examination
92289	92004	Exam, Optometry Flight Class I
92290	92004	Exam, Optometry Flight Class II
92291	92004	Exam, Optometry Flight Class III
92292	92004	Exam, Optometry Flight Class ATC/WO
92319	92310	Contact Lens, Hard/Gas Permeable (Eval, Fit, or Dispense)
92320	92310	Contact Lens, Mandatory (Eval, Fit or Dispense)
92343	92340	Eval, Eyeware
92375	92341	Spectacle Procedure (Fit, Order, Adjust)
92380	92340	Vision Conservation, Issue Plano
92489	92391	Contact Lens, Verification
92491	90030	Lensometry
92492	92310	Contact Lens, Evaluation For
92493	92310	Contact Lens, Follow-up

APPENDIX K: AMBULATORY CARE DATA BASE (ACDB) EXTENDED PROCEDURE CODES WITH CONVERSIONS TO CPT-4 (cont'd):

EXTCD	CPT-4	DESCRIPTION
92494	92310	Contact Lens, Fitting
92495	92310	Contact Lens, Refitting
92496	92391	Contact Lens, Dispensing
92497	92002	Refraction, Manual
92498	92002	Refraction, Automated
92505	92506	Eval, Medical, Speech, Language or Hearing (Child)
92509	92507	Individual Speech Therapy (Child)
92510	92508	Group Therapy, Speech (Child)
92513	92511	Rhinoscopy
92548	92543	Eval, Otoneurological, For Vertigo
92558	92557	Audiology Test Battery/Immittance Test Battery
92593	92591	Consulatation, Hearing Aid (Binaural)
92597	92557	Hearing Evaluation Pediatric
92598	92590	Earmold
92601	99070	Speech Communication Device Provided
92602	92590	Hearing Aid Issue
92603	92590	Hearing Aid Orientation
92604	92592	Hearing Aid Repair
92605	92507	Aural Rehabilitation
92606	99070	Speech Materials Provided
92607	92556	Word Recognition Scores
92608	92589	Supra Threshold Adapation Test
92609	92589	Performance Intensity Function
92610	99155	Counseling, Hearing Conservation
92611	99155	Counseling, Speech
92612	90030	Hearing, Issue/Fit Protection Device
92613	92592	Calibration, Hearing Aid
93012	93014	Rhythm Strip Analysis
93016	93015	Stress Test, Bicycle
93321	93320	Echo, M-Mode, Doppler, Interpretation Only
93786	90030	Blood Pressure Check
93871	93870	Duplex Scanning
93872	93870	Arteriography, Transcutaneous Ultrasonic
93891	90030	Bilat Arm BP Measurements
93911	93910	SEG Pressure Measurements
93912	93910	Ankle Pressure Measurements
94020	90040	Interpretation of Routine Pulmonary Function Studies
94061	94060	Spirometry, After Exercise
94401	94450	Oxygen Stimulation Tests
94691	95827	Sleep Studies
95004	95001	Prick Test To 60
95010	95002	Skin Test, Food, Prick
95012	95006	Skin Test, Drug, Prick
95015	95022	Intradermal Test Skin Test To 30
95024	95001	Skin Test, Inhalants, Prick
95035	95021	Skin Test, Inhalants, Intradermal
95072	94070	Bronchial Challenge, Water
95073	94070	Bronchial Challenge, Sulfite
95074	94070	Bronchial Challenge, Histamine
95090	95006	Skin Test, Hymemoptera Venoms, Prick
95091	95018	Skin Test, Hymenoptera Venoms, Intradermal
95092	95016	Skin Test, Drugs, Intradermal
95093	95006	Skin Test, Fireant, WBE, Prick
95094	95016	Skin Test, Fireant, WBE, Intradermal
95122	95131	Immunization, Allergy, Two Injections
95123	95132	Immunization, Allergy, Three Injections
95124	95133	Immunization, Allergy, Four Injections

APPENDIX K: AMBULATORY CARE DATA BASE (ACDB) EXTENDED PROCEDURE CODES WITH CONVERSIONS TO CPT-4 (cont'd):

EXTCD	CPT-4	DESCRIPTION
95181	95180	Densensitization Proc, Insulin
95182	95180	Densensitization Proc, Penicillin
95183	95180	Densensitization Proc, Misc
95200	95078	PUC, Mecholyl Skin Test
95201	95078	PUC, Hot Water Immersion Test
95202	95078	PUC, Exercise Challenge For Cholinergic Urticaria
95203	95078	PUC, Ice Cube Test
95204	95078	PUC, Pressure Test Immediate
95205	95078	PUC, Pressure Urticaria Delayed Test
95206	95078	PUC, Vibratory Test
95207	95078	PUC, Morphine Sulfate Skin Test
95208	95078	PUC, Dermographia Test
95210	86155	Rebuck Skin Window
95215	95078	Challenge Test, Dye
95216	95078	Challenge Test, Preservative
95217	95078	Challenge Test, Food
95218	95078	Challenge Test, Aspirin
95219	95078	Challenge Test, NSAIA
95220	95078	Challenge Test, Drug Misc
95221	90798	Emerg Treat, Asthma
95223	90798	Emerg Treat, Anaphylaxis (Epinephrine)
95640	94640	Inhalation Therapy
95850	95851	Biomechanical Exam
95901	95900	Nerve Conduction Studies, Two Extremities
95902	95900	Nerve Conduction Studies, Three Extremities
95903	95900	Nerve Conduction Studies, Four Extremities
95910	92585	Evoked Potentials, Brainstem
95911	92280	Evoked Potentials, Visual
95920	90000	Eval, Neurovascular
95934	95935	Evoked Potentials, (F Reflex)
96502	90784	Injec, Streptokinase, Intravenous
96503	90782	Injec, Gold
96521	96520	Port Pump Refill Day 2-5
96522	90030	Port-A-Cath Flush, Complex
96523	90030	Port-A-Cath Flush, Simple
96548	90030	Vital Signs Monitoring - 2, 4, or 6 Hours Post Chemo
96550	90784	Injec, Heparin
96600	96524	Chemotherapy, Investigational Drug
97702	97700	Orthotics Check
97703	97700	Prosthetic Check
9705	90050	Pressure Garment Fitting
98100	99070	OPAB, Reece Shoe
98101	99070	OPAB, Reece Shoe w/Extra Padding
98102	99070	OPAB, Plastizote Insole
98103	99070	OPAB, Heat Molded Plastizote
98104	99070	OPAB, Spenco Inserts
98105	99070	OPAB, Spenco w/Scaphoid Pads
98106	99070	OPAB, Spenco w/Cutouts
98107	99070	OPAB, Spenco w/Cutouts & Scaphoid Pads
98108	99070	OPAB, Spenco w/Metatarsal Pads
98109	99070	OPAB, Spenco w/Metatarsal Bars
98110	99070	OPAB, Spenco w/Dancers Pads
98111	99070	OPAB, Spenco Forefoot Extension
98112	99070	OPAB, Spenco w/Edge
98113	99070	OPAB, Spenco w/Scaphoid & Edge
98114	99070	OPAB, Spenco w/Met. Bar & Scahoid pad
98115	99070	OPAB, Add Mortons Extension

APPENDIX K: AMBULATORY CARE DATA BASE (ACDB) EXTENDED PROCEDURE CODES WITH CONVERSIONS TO CPT-4 (cont'd):

EXTCD	CPT-4	DESCRIPTION
98116	99070	OPAB, 1/4, 3/8, 1/2 Inch Heel Lifts
98117	99070	OPAB, Heel Spur Insert
98118	99070	OPAB, Heel Cups
98119	99070	OPAB, Heel Wedges (Internal)
98120	99070	OPAB, Stock Arch Supports
98121	99070	OPAB, Cork & Leather Arch Supports
98122	99070	OPAB, Polypropylene Arch Supports
98123	99070	OPAB, Dennis Brown Splints
98124	99070	OPAB, BMI
98125	99070	OPAB, UCB Inserts
98126	99070	OPAB, Flexi - Flange
98127	99070	OPAB, Sole Wedges (Internal)
98128	99070	OPAB, Soft Sole
98129	99070	OPAB, Feet, Other
98140	99070	OPAB, Leather Lace or Canvas Lace
98141	99070	OPAB, Fabricate Leather Lace
98142	99070	OPAB, Elastic Anklet
98143	99070	OPAB, Orthoplast Stirrup Splint
98144	99070	OPAB, AFO (Stock)
98145	99070	OPAB, AFO (Fabricated)
98146	99070	OPAB, Short Leg Orthosis
98147	99070	OPAB, M-R Splint
98148	99070	OPAB, Ankle, Other
98160	99070	OPAB, Cart./Hinged/Elastic Support
98161	99070	OPAB, Cho-Pat Strap
98162	99070	OPAB, Neoprene Sleeve
98163	99070	OPAB, Lenox Hill
98164	99070	OPAB, Lerman
98165	99070	OPAB, KO (Fabricated)
98166	99070	OPAB, Measure for Jobst Hose
98167	99070	OPAB, Meas F/Jobst Hose w/Garter Belt
98168	99070	OPAB, Garter Belt
98169	99070	OPAB, Waist Suspension Belt
98170	99070	OPAB, Long Leg Orthosis
98171	99070	OPAB, PTB (Polyproylene)
98172	99070	OPAB, PTB (Orthoplast)
98173	99070	OPAB, Knee/Leg, Other
98174	99070	Patella Stabilizer
98175	99070	Swedish Knee Cage
98180	99070	OPAB, Stump Socks
98181	99070	OPAB, Distal End Pad
98182	99070	OPAB, Pylons/Satch Foot
98183	99070	OPAB, Prosthetics, Other
98190	99070	OPAB, Scottish-Rite
98191	99070	OPAB, Pavlik Harness
98192	99070	OPAB, Akho
98193	99070	OPAB, HO
98194	99070	OPAB, Hips, Other
98200	99070	OPAB, CVA Sling
98201	99070	OPAB, Tennis Elbow
98202	99070	OPAB, Elbow Pads
98203	99070	OPAB, Elastic Wrist Band
98204	99070	OPAB, Canvas Wrist Gauntlet
98205	99070	OPAB, Polypropylene Wrist Gauntlet
98206	99070	OPAB, Measure for Jobst Gloves
98207	99070	OPAB, Finger Splints
98208	99070	OPAB, Airplane Splints

APPENDIX K: AMBULATORY CARE DATA BASE (ACDB) EXTENDED PROCEDURE CODES WITH CONVERSIONS TO CPT-4 (cont'd):

EXTCD	CPT-4	DESCRIPTION
98209	99070	OPAB, Arms/Hands, Other
98220	99070	OPAB, Cervical Collar
98221	99070	OPAB, Four Poster
98222	99070	OPAB, S. O. M. I.
98223	99070	OPAB, Jewett
98224	99070	OPAB, Cash
98225	99070	OPAB, TLSO
98226	99070	OPAB, Chair Back
98227	99070	OPAB, Taylor Back
98228	99070	OPAB, Abdominal Binder
98229	99070	OPAB, L-S/S-I Corset
98230	99070	OPAB, Spinal, Other
98231	99070	Lumbar Corset
98240	99070	OPAB, Stretch Boots
98241	99070	OPAB, Stirrup Changes
98242	99070	OPAB, Heels
98243	99070	OPAB, Wedges (External)
98244	99070	OPAB, Build-ups
98245	99070	OPAB, Rocker Bottom
98246	99070	OPAB, Ripple Soles
98247	99070	OPAB, Crepe Soles
98248	99070	OPAB, Leather Soles
98249	99070	OPAB, Metatarsal Bars (External)
98250	99070	Add Velcro To Shoes
98251	99070	OPAB, Shoes, Other
98252	99070	Measure For Boston Shoes
98260	99070	OPAB, Replace Calf Leather
98261	99070	OPAB, Replace Thigh Lacer
98262	99070	OPAB, Refurbish Long Leg Orthosis
98263	99070	OPAB, Refurbish Short Leg Orthosis
98264	99070	OPAB, Refurbish Scottish-Rite
98265	99070	OPAB, Recover Airplane Splint
98266	99070	OPAB, Readjust Airplance Splint
98267	99070	OPAB, Trim TLSO
98268	99070	OPAB, Replace Straps on TLSO
98269	99070	OPAB, Minor Lennox Hill Repairs
98270	99070	OPAB, Repair Post/Polypropylene Arch
98271	99070	OPAB, Hook & Pike
98272	99070	OPAB, Cut Material w/Bandsaw
98273	99070	OPAB, Sew Material
98274	99070	OPAB, Remove Shoe Build-up
98275	99070	OPAB, Repair/Replace/Fabs, Other
99025	90774	Exam, Developmental Screen For Handicaps In Early Childhood
99069	99070	Ordering Home Dialysis Supplies
99074	90030	Suture Remove & Dress
99076	99155	Teaching, Breast Self Exam
99077	99155	Teaching, Testicular Self Exam
99079	99155	Patient Education (Nephrology)
99081	99080	Med Record Review
99083	90155	Teaching, (Other Direct Patient)
99084	99082	Escort of patient (AMBUL)
99085	99082	Escort of Patient (MEDEVAC)
99086	99082	Transport of Patient (EMER)
99091	99080	Screen, In Process Medical
99092	99080	Screen, POR
99093	99080	Screen, PRP

APPENDIX K: AMBULATORY CARE DATA BASE (ACDB) EXTENDED PROCEDURE CODES WITH CONVERSIONS TO CPT-4 (cont'd):

EXTCD	CPT-4	DESCRIPTION
99094	99080	Screen, Security Clearance
99157	99155	Nurse-Patient Counseling
99158	99155	General Counseling/Advice Contraceptive
99169	99160	Mult Trauma Resus (Team Leader)
99196	36415	Phlebotomy, Diagnostic

APPENDIX L

AMBULATORY CARE DATA BASE (ACDB)
EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM

EXTCD	ICD-9-CM	DESCRIPTION
S2102	V608	Physical Barriers, Home or Community
S2103	V608	Health Hazards
S2105	V608	Barracks Condition
S2106	V608	Adequate Housing Unavailable For Dependent
S2107	V602	Faces Eviction
S2108	V609	Other Living Condition Problem
S2111	V618	Responsible Relative Unable To Cope
S2112	V604	Inadequate Support From Extended Family
S2115	V610	Situational Family Separation
S2117	V610	Problem Associated w/Being Sole Parent
S2118	V6120	Child-Mother
S2119	V618	Family Problem Assosciated w/Troop Deployment
S2120	V619	Other Family Problem
S2131	30989	Problem Adjusting To Medical Condition
S2132	30989	Adjustment to Acute Illness
S2133	30989	Adjustment to Chronic Illness
S2134	30989	Adjustment to Terminal Illness
S2135	30989	Adjustment to Chronic Disability
S2136	V654	Poor Understanding of Injury/Illness, DEA
S2137	V654	Poor Understanding of Treatment Process
S2138	V658	Unable to Follow Treatment Proagram
S2139	V1581	Unwilling to Follow Treatment Program
S2140	30151	Secondary Gains From Illness/Injury
S2141	V659	Inappropriate Use of MTF
S2142	V609	Needs Discharge Plan
S2143	V632	Needs Nursing Home Placement
S2144	V469	Dependence On Machines
S2145	9599	Assault Victim
S2146	V643	Requir/Request Proc/Not Avail/Thru/Mil/Ch
S2147	V659	Other Health/Med Problem
S2151	V602	Inadequate Income
S2152	V602	Inadequate Health Coverage
S2153	V608	Poor Money Management
S2154	V608	Indebtedness
S2155	V608	Pay Problems
S2156	V608	Bad Check Writing
S2157	V608	Unexpected/Emergency Expenses
S2158	V609	Other Economic Problem
S2161	V623	Illiterate
S2163	V400	Poor Reader
S2164	V623	School Dropout
S2165	V623	Inadequate Training/Education
S2166	V623	Needs Special Educational Program
S2168	V654	Requires Information RE: MGT of Illness
S2169	V268	Require/Inform/Regard/Pre/Postnatal/Alter
S2170	V622	Other ED/VOC Problem
S2182	V622	Underemployment
S2184	V622	Superior Subordinate Difficulty
S2185	V622	Limitations in Kinds of Employment
S2186	V622	Inappropriate Employment
S2187	V622	Inadequate Job Performance
S2188	V622	Other Employment Problem
S2203	V624	Social Isolation
S2204	V6281	Peer Relationship Difficulties

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
S2205	V6281	Problems w/Other Personal Relationship
S2207	3089	Normal Reaction to Stress Situation
S2208	V403	Behavioral Management
S2209	V409	Behavior Stressful to PTS/Staff
S2210	V6289	Behavior Stressful to Self/Family/Others
S2211	V6289	Other Problems of Psychosocial Functioning
S2221	V6129	Child Management Problems
S2222	V623	Absence From School
S2223	V623	Discipline Problems At School
S2224	3129	Delinquency
S2225	3139	Other Problem of Childhood
S2231	V6289	Problems Adjusting to Different Culture
S2232	V6289	Conflicts of Customs, Mores, Etc
S2233	V401	Language Limitations
S2234	V629	Other Cultural Problem
S2241	V6289	Lack of Religious Support
S2243	V626	Religious Practice Conflicts
S2245	V6289	Other Religious Problems
S2251	V638	No Community Resources Available
S2252	V630	Resources Inaccessible
S2253	V638	Resources Inadequate for Needs of Patient
S2254	V608	Resource Delay Responding to Need
S2256	V639	Other Community Resource Problem
S2261	V602	PT/Family Has No Private Transportation
S2262	V638	No Community Transportation Resources
S2263	V608	Resources Unavailable On Timely Basis
S2264	V602	Unreliable Transportation
S2265	V602	Resources Unable to Meet Patient Needs
S2266	V638	Other Transportation Problem
S2271	V613	Elderly At risk
S2272	V6149	Child At Risk
S2273	V159	Other At Risk
S2274	V613	Suspected Elderly Abuse
S2275	99581	Confirmed Elderly Abuse
S2279	V618	Suspected Spouse Abuse
S2280	99581	Confirmed Spouse Abuse
S2281	99581	Other Abused Person
S2291	V6289	Multi-Problem Situation
S2292	V6889	Needs Adoptive Services
S2293	V610	Stress of Divorce Procedings
S2295	V154	Environmental Disaster Victim
S2296	V654	Request/Needs Information
S2297	V6289	Problems Caused By Admin/Bureau Failure
S2298	V658	Social Work Problems, Other, I
S2299	V658	Social Work Problems, Other, II
S2301	V658	Social Work Problems, Other, IV
S3051	30510	Tobacco Use Disorder
V0171	V017	Hepatitis Exposure
V05	V069	Immunization, Prophylactic
V0711	V071	Desensitization to Allergens Follow-up
V0731	V073	INH Prophylaxsis
V0732	V073	Endocarditis, Prophylaxis
V213	V218	Growth Discrepancy
V219	V6149	EFM Functional Need Assessment
V22	V221	Pregnancy, Normal
V226	V221	Pregnancy, Teenage
V23	V239	Pregnancy, High Risk

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
V2421	V242	Aftercare, OB (PT)
V250	V2509	General Counseling & Advice
V2504	V2509	Vasectomy Request
V254	V2540	Surveillance Contraceptive Method
V30	V202	Normal Newborn
V4582	V588	T&A Post-OP
V4583	V588	Spine, Post-OP
V4950	V495	Prior Surg Revascular Attempt of Limb
V5331	V533	Pacemaker, Single Chamber
V5332	V533	Pacemaker, Dual Chamber
V5371	V537	Needs Orthotic Appliance
V5372	V537	Repair of Orthotic Appliance
V5373	V537	Repair of Orthotic Prosthetic
V547	V548	Aftercare, Prosthetic Replacement
V5481	V548	Cast Reapplication
V5490	V549	Aftercare Amputation, Hand
V5491	V549	Aftercare Amputation, Finger
V5492	V549	AFtercare Amputation, Upper Arm
V5493	V549	Aftercare Amputation, Forearm
V5494	V549	Aftercare Amputation, Thigh
V5495	V549	Aftercare Amputation, Lower Leg
V5574	V528	Problem With Prosthesis
V5575	V529	Other Reason For Visit
V5730	V573	Post Laryngectomy, Rehab
V5731	V573	Laryngeal Disorder, Rehab
V5732	V573	Post Tracheotomy/Tracheostomy, Rehab
V5733	V5789	Post Concussion, Rehab
V5841	V584	Aftercare, Knee Surgery
V5842	V584	AFtercare, Shoulder Surgery
V5843	V584	Aftercare, Thoracic Surgery
V5844	V584	Aftercare, Renal Transplant
V5845	V584	Aftercare, Mastectomy
V5846	V584	Aftercare, Vascular Surgery
V5847	V584	Aftercare, Cardiac Surgery
V5881	V584	Aftercare, Abdominal Surgery
V5882	V588	Aftercare, Heart Disease Treatment
V5883	V584	Aftercare, Craniotomy
V5890	V571	Aftercare, Amputation, Other (PT)
V5891	V571	Aftercare, Amputation, Upper Arm (PT)
V5892	V571	Aftercare, Amputation, Forearm (PT)
V5893	V571	Aftercare, Amputation, Thigh (PT)
V5894	V571	Aftercare, Amputation, Leg (PT)
V5895	V572	Aftercare, Amputation (OT)
V5896	V5781	Aftercare, Orthotic
V6031	V603	Lives Alone, Unable to Care For Self
V6110	V611	Marital Problem
V6119	V611	Marital Problem
V6122	V6120	Suspected Child Neglect
V6123	V6121	Confirmed Child Neglect
V6124	V6120	Suspected Child Abuse
V6125	V6121	Confirmed Child Abuse
V6126	V6121	Non-Accidental Trauma
V6180	V618	Other Specified Family Circumstances
V6102	V620	Needs Employment
V6202	V620	Laid Off
V6220	V622	Occupational Problem
V6230	V623	Adcademic Problem

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
V6251	V6889	Needs Consent to Admit or Treat
V6252	V6889	Needs Consent For Surgical Procedures
V6253	V6889	Needs consent For Discharge Planning
V6254	V625	Needs Protective SVC For Child or Adult
V6255	V625	Needs Legal Assist For Civil/Med Matters
V6256	V625	Legal Problems, Other
V6261	V626	Religion Opposes Medical Care
V6288	V6289	Borderline Intellectual Function
V6291	V624	Psychosocial Deprivation
V63	V639	Unavail of Med Facilities For Care
V6391	V638	No Vacancies In Other Health Care Facilities
V6520	V652	Malingering
V6551	V655	Emmetropia
V6552	V642	Left Against Medical Advice
V6553	V642	Left Without Being Seen
V6581	V658	Blood Pressure Check
V6811	V681	REQ For Non Prescrip Medication
V6882	V798	PT Referred By Milpo For Fam Member Screen
V7031	V703	Exam, School Physical
V7032	V703	Exam, Sports Physical
V7051	V705	POR Qualificaitons
V710	V7109	NP Observation
V7201	V720	Request For Glasses
V7231	V723	Exam, Well Woman
V73	V739	Special Screening For Viral Disease
V7379	27910	HTLV-III, Stage Unspecified
V8160	V816	Other & Unspec Genitourinary Conditions
V8261	V705	Wellness Maintenance/Health Promotion
000	V659	No Diag/Reasn For Visit Recorded By Prov
00022	7999	Unknown Cause of Morbidity/Mortality
001	0019	Enteritis, Cholera
00645	7999	Unknown Cause of Morbidity/Mortality
00731	7999	Unknown Cause of Morbidity/Mortality
00881	0088	Enteritis, Viral
00882	5589	Diarrhea/Gastroenteritis
00901	0090	Colitis, Proven Infectious
0109	01090	Tuberculin Converter
0119	01190	Tuberculosis, Pulmonary
0120	01200	Tuberculosis, Effusion, Pleural
013	01390	Tuberculosis, Meninges & Cent Nervous System
015	01590	Tuberculosis, Bones & Joints
0150	01500	Tuberculosis, Vertebral
0159	0318	Arthritis, Mycobacterial
0160	01600	Tuberculosis, Renal
018	01880	Tuberculosis, Military, Disseminated
019	01790	Tuberculosis, Nonplulmonary
020	0209	Plague
021	0219	Tularemia
022	0229	Anthrax
023	0239	Brucellosis
03191	0319	Infection, Atypical Mycobacterial
038	0389	Septicemia
03981	0399	Nocardia
03990	0399	Actinomycosis
03991	0399	Nocardiosis
04082	04089	Toxic Shock Syndrome
04292	27910	Aids, Neurological

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
045	0459	Poliomyelitis, Acute
0451	04510	Poliomyelitis, Acute w/Other Paralysis
046	0469	Slow Virus Infection of Cent Nervous System
052	0529	Varicella (Chickenpox)
054	0549	Herpes Simplex
05430	0543	Herpetic Meningoencephalitis
055	0559	Rubeola
060	0609	Yellow Fever
06553	7999	Unknown Cause of Morbidity/Morality
070	0709	Hepatitis, Viral, NOS
07015	0701	Hepatitis A, Viral w/o Hepatic Coma
07811	0781	Condyloma, Acuminatum
07812	0781	Condyloma, Vagina (Unless Syphilitic)
07813	0781	Warts, Plantar
07814	0781	Condyloma, Vulva (Unless Syphilitic)
07815	0781	Condyloma, Cervix (Unless Syphilitic)
07981	0798	Chlamydia
082	0829	Rickettsiosis Tick Borne
094	0949	Neurosyphilis
098	0980	Gonorrhea
09801	0980	Urethritis, Gonococcal
0989	09889	PPNG
09941	0994	Urethritis, Chlamydia
100	1009	Leptospirosis
110	1109	Dermatophytosis
111	1119	Dermatomycosis, Other, Unspec
114	11419	Coccidioidomycosis
115	11590	Histoplasmosis
11791	1179	Pneumonia, Fungal, Not Histo/Coccid
1310	1310	Trichomoniasis, Urogen
13691	1369	Infectious Disease, Unspec
141	1419	Neoplasm, Malignant, Tongue
143	1439	Neoplasm, Malignant, Gum
144	1449	Neoplasm, Malignant, Floor Of Mouth
149	1499	Neoplasm, Malig, Ill Def Site Lip/Oral
152	1529	Neoplasm, Malig, Small Intest/Deodenum
153	1539	Neoplasm, Malignant, Colon
154	1548	Neoplasm, Malig, Rectum/Rectosigmoid/Anus
1544	1540	Neoplasm, Malignant, Rectosigmoid Junct
155	1552	Neoplasm, Malig, Liver/Intrahep Bile Ducts
156	1568	Neoplasm, Malig, Gallbl/Extrahep Bile Ducts
157	1579	Neoplasm, Malignant, Pancreas
158	1589	Neoplasm, Malig, Retroperi & Peritoneum
160	1608	Neoplasm, Malig, Nasal Cav/Mid Ear/Sinus
162	1628	Neoplasm, Malignant, Trachea/Bronchus/Lung
16281	1628	Abenoma, Bronchial, Carcinoid
16290	1629	Neoplasm, Malignant, Bronchogenic, Primary
16291	1629	Neoplasm, Malignant, Lung, Poorly Diff
16292	1629	Neoplasm, Malignant, Lung Undiff
16293	1629	Cylindroma
16294	1629	Neoplasm, Malig, Bronchogenic, Large Cell
16295	1629	Neoplasm, Malig, Bronchogenic, Small Cell
16296	1629	Neoplasm, Malig, Broncho, Squamous Cell
16297	1629	Neoplasm, Malig, Lung/Nodules, Parenchymal
16298	1629	Adenocarcinoma, Lung
163	1639	Neoplasm, Malignant, Pleura
164	1648	Neoplasm, Malig, Thyus/Heart/Mediastinum

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
17000	1700	Neoplasm, Malignant, Temporal Bone, Ear
17001	1700	Neoplasm, Malignant, Skull
17020	1702	Neoplasm, Malignant, Vertebral Column
17112	1719	Neoplasm, Malignant, Connective Tissue
17192	1719	Neoplasm, Malignant, Connective Tissue
17193	1718	Neoplasm, Malig, Lymph/Blood/Soft Tissue
172	1729	Melanoma, Malignant, Skin
173	1739	Neoplasm, Malignant, Skin, Nos
17391	1739	Neoplasm, Malignant, Skin, Basal Cell
17392	1739	Neoplasm, Malignant, Squamous Cell
1811	181	Choriocarcinoma
186	1869	Neoplasm, Malignant, Tests
187	1879	Neoplasm, Malignant, Male Genitalia, Nos
1895	1890	Neoplasm, Malignant, Kidney
1896	1879	Neoplasm, Malig, Genitalia, Unspec (Male) C3(Fem)
190	1909	Neoplasm, Malignant, Eye
19001	1908	Neoplasm, Malignant, Eye/Orbit
19100	1910	Neoplasm, Malig, Cerebrum, Ex Lobes/Vents
19291	1719	Neoplasm, Malignant, Peripheral Nerves
194	1949	Neoplasm, Malig, Endo Gland & Relat Struct
19440	1944	Neoplasm, Malignant, Pineal Region
19501	1950	Neoplasm, Malignant, Nose
197	1973	Neoplasm, Malig, Respir/Disgest Sys, Secon
198	19889	Neoplasm, Malig, Other Spec Sites, Secondary
19821	1982	Neoplasm, Malig. Mastectomy Site, Secondary
19831	1983	Neoplasm, Malignant, Brain, Secondary
19832	1983	Neoplasm, Malignant, Spine, Secondary
19883	19889	Neoplasm, Malignant, Head & Neck, Secondary
1991	1991	Neoplasm, Malig, Secondary, Unspec Site
19912	1991	Neoplasm, Malignant, Nos
19913	1991	Paraneoplastic Syndrome
19914	1991	Neoplasm, Malignant, Major Organ, Unspec
19915	1991	Remote Effect of Neoplasms
1995	1990	Complication, Cancer, All Sites
200	20080	Lymphosarcoma & Reticulosarcoma
2000	20000	Reticulosarcoma
2001	20010	Lymphosarcoma
2002	20020	Burkitt's Tumor or Lymphoma
2008	20080	Other Variants Lymphosarcoma/Reticulosarcoma
201	20190	Hodgkin's Disease
2014	20140	Lymphocytic-Hystiocytic Predominance
2015	20150	Nodular Sclerosis
2016	20160	Mixed Cellularity
2017	20170	Lymphocytic Depletion
202	20290	Neoplasm, Malig, Other Lymphoid/Histiocytic
2020	20200	Nodular Lymphoma
2021	20210	Mycosis Fungiodes
2022	20220	Sezary's Disease
2023	20230	Malignant Histiocytosis
20231	20230	Reticuloendothelioses, Malignant
2024	20240	Leukemic Reticuloendotheliosis
2025	20250	Letterer-Siwe Disease
2026	20260	Malignant, Mast Cell Tumors
20281	20280	Lymphoma, Cutaneous
29282	20010	Lymphoma, Lymphocytic, Malignant, Nos
20283	20280	Lymphoma/Leukemia, Primary Of Lung
204	2049	Lymphocytic Keukemia

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
205	2059	Leukemia, Myeloid
20501	2050	Leukemia, Myelocytic, Acute
20511	2051	Leukemia, Myelocytic, Chronic
206	2069	Leukemia, Monocytic
208	2089	Leukemia, Unspec Cell Type
21121	2112	Neoplasm, Benign, Small Intestine
21210	2121	Papilloma, Laryngeal
21211	2121	Papilloma, Vocal
21300	2130	Neoplasm, Benign, Skull
21321	2132	Neoplasm, Benign, Spine
21501	2150	Neuroma, Neck
21593	2159	Neuroma, Unspec
21691	7019	Acrochordon
21692	2169	Dermatofibroma
21693	2169	Nevus, Melanocytic, Benign
21694	2169	Neoplasm, Benign, Skin/Subcutaneous Tissue
2171	217	Papilloma, Intraductal
2172	217	Fibroadenoma, Breast
221	2219	Neoplasm, Benign, Female Genitalia
222	2229	Neoplasm, Benign, Male Genitalia
2234	2230	Neoplasm, Benign, Kidney
225	2254	Meningioma, Intracranial Or Spinal
22511	2251	Neuroma, Acoustic
22701	2270	Pheochromocytoma
22702	2270	Adenoma, Adrenal Gland
22731	2273	Neoplasm, Benign, Sellar/Suprasellar
22740	2274	Neoplasm, Benign, Pineal Region
2280	22801	Hemangioma
2299	2298	Neoplasm, Benign, Unspec Site
22994	1991	Neoplasm, Mesothelioma
23291	2329	Bowen's Disease, Site Unspec
23292	2329	Melanoma, In Situ
23293	702	Keratosis, Actinic
23331	2333	Carcinoma, In-Situ, Vulva, Cis
23332	2333	Carcinoma, In-Situ, Vagina, Cis
23571	2357	Adenoma, Bronchial
23821	7011	Keratoacanthoma
23861	2386	Plasmacytoma
23900	2390	Neoplasm, Nasopharynx, Unspec Nature
23901	2390	Neoplasm, Esophagus, Unspec Nature
23902	2390	Neoplasm, Stomach, Unspec Nature
23903	2390	Neoplasm, Bilitary Tract, Unspec Nature
23904	2390	Neoplasm, Liver, Unspec Nature
23905	2390	Neiplasm, Pancreas, Unspec Nature
23906	2390	Neoplasm, Gallbladder, Unspec Nature
23907	2390	Neoplasm, Small Intestine, Unspec Nature
23908	2390	Neoplasm, Colon, Unspec Nature
23909	2390	Neoplasm, Signoid, Unspec Nature
23911	2391	Neoplasm, Larynx, Unspec Nature
23912	2391	Neoplasm, Pleura, Unspec Nature
23921	2391	Neoplasm, Epidermal, Unspec Nature
23922	2392	Neoplasm, Dermal, Unspec Nature
23923	2392	Neoplasm, Subcutaneous, Unspec Nature
23924	2392	Neoplasm, Spinal Column, Unspec Nature
23951	2395	Neoplasm, Cervix, Unspec Nature
23952	2395	Neoplasm, Kidney, Unspec Nature
23953	2395	Neoplasm, Ovary, Unspec Nature

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
23954	2395	Neoplasm, Penis, Unspec Nature
23955	2395	Neoplasm, Prostate, Unspec Nature
23956	2395	Neoplasm, Testicle, Unspec Nature
23957	2395	Neoplasm, Uterus, Unspec Nature
23963	2396	Neoplasm, Brain Tumor, Unspec
23970	2397	Neoplasm, Spinal Cord, Unspec Nature
23971	2580	Neoplasm, Mult Endocrine Neoplasia Synd
23975	2397	Neoplasm, Spinal Meninges, Unspec Nature
23976	2397	Neoplasm, Adrenal, Unspec Nature
23977	2397	Neoplasm, Nervous System, Unspec Nature
23978	2397	Neoplasm, Pituitary, Unspec Nature
23979	2397	Neoplasm, Thyroid, Unspec Nature
23900	27992	Orbital Mass
23981	2390	Neoplasm, Salivary Gland, Unspec Nature
23982	2390	Neoplasm, Tongue, Unspec Nature
23983	2390	Neoplasm, Tonsils, Unspec Nature
23984	2390	Neoplasm, Rectum/Anus, Unspec Nature
24091	2409	Goiter, Diffuse Nontoxic
2420	24200	Goiter, Diffuse Toxic
2429	24290	Hyperthyroidism
24490	2449	Hypothyroidism, Acquired
24521	2452	Thyroiditis, Hashimoto's
24621	2469	Mass, Thyroid
250	25000	Diabetes Mellitus
2506	25060	Neuropathy, Diabetic
2509	25090	Diabetic Complication, Nos
25300	2530	Acromegaly & Gigantism
25311	2531	Hyperprolactinemia Ant Pit Hyperfunct
25312	2531	Amenorrhea/Galactorrhea Ant Pit Hyperfunct
25320	2532	Panhypopituitarism
25541	2554	Addison's Disease
25581	2558	Adrenal Hyperplasia
25631	2563	Hypogonadism, Female
25721	2572	Hypogonadism, Male
25881	2588	Polyglandular Failure, Autoimmune
27131	2713	Intolerance, Lactose Pediatric
272	2729	Metabolic Disorder, Lipid
274	2749	Gout
27541	2754	Hypercalcemia
27542	2754	Hypocalcemia
27581	2758	Metabolic Bone Disease
27691	2767	Potassium Disorders, Other
2770	27700	Cystic Fibrosis
27741	2774	Bilirubin Metabolism, Abnormal
27781	2778	Granuloma, Eosinophilic
27801	2780	Obesity, Pediatric
2791	27919	Deficiency, Cell-Mediated Immunity
27916	27910	HTLV III Positivity
27917	27910	Aids Related Complex (ARC)
27918	27910	Immunodeficiency, Acquired (Aids)
27922	2792	Immunodeficiency, Hereditary
280	2809	Anemia, Deficiency, Iron
281	2819	Anemia, Deficiency, Unspec
28220	2822	Anemia, Deficiency, G-6PD
2826	28260	Anemia, Sickle Cell
2838	2831	Anemia, Hemolytic, Toxic
284	2849	Anemia, Aplastic

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
28481	2848	Anemia, Aplastic, Due To Chronic Disease
285	2859	Anemia, Unspec
287	2872	Purpura
28711	2871	Coagulopathy, Platelet Defects Acquired
28901	2890	Polycythemia, Spurious
28981	2898	Macrocytosis
28982	2898	Myelofibrosis
28991	2899	Thrombocytosis, Essential
28992	2899	Thrombocytosis, Other
29000	2900	Dementia, Pri Degen Senile Onset, Uncompl
29030	2903	Dementia, Senile, w/Delirium
2905	2948	Organic Mental Disord, Uncomplicated
29100	2910	Alcohol, Withdrawal Delirium
29101	2910	Delerium Tremens
29110	2911	Alcohol, Amnestic Disorder
29120	2912	Dementia, Alcoholic, Unspec
29130	2913	Alcohol, Hallucinosis
29140	2914	Alcohol, Idiosyncratic Intoxication
29180	2918	Alcohol Withdrawal
292	2929	Psychosis, Drug
29290	2929	Psychosis, Drug
29300	2930	OBS w/ Delirium
29301	2930	Confusional State, Acute, Organic
29391	2948	Psychosis, Toxic/Metabolic
29400	2940	Amnestic Syndrome, OBS w/Add DX or Unknown
29410	2941	Dementia, OBS w/Add DX or Unknown Etiol
2942	2949	Organic Psychoses Excl Alcoholic
2943	2941	Dementia, Post-Traumatic
29480	2948	Organic Brain Syndrome Atypical or Mixed
2953	29530	Paranoid Type Disorder
2959	29590	Schizophrenia, Unspec
2962	2980	Depressive Psychosis
29622	29620	Depression, Major, Single Episode, w/o ME
29623	29620	Drpression, Major, Single Episode, w/Mela
29627	29620	Depression, Maj, Sin Epi, w/Psy Feat Mood
2963	29630	Depression, Major, Recurrent Episode
29632	29630	Depression, Major, Recurrent, w/o Melanch
29633	29630	Depression, Major, Recurrent, w/Melanchol
29637	29630	Depression, Maj, Recurr, w/Psy Feat Mood
29642	29640	Bipolar Disorder, Manic, w/o Psychotic FE
2965	29650	Bipolar Affective Disorder, Depressed
29652	29650	Bipolar Disorder, Depressed, w/o Psychoti
29657	29654	Bipolar Dis, Dep w/Psy Feat Mood Incong
29662	29660	Bipolar Disorder, Mixed, w/o Psychotic
2967	29664	Bipolar Dis, Mix, w/Psy Feat Mood Incong
29670	2967	Bipolar Disorder, Atypical
29710	2971	Paronoia
29730	2973	Paranoid Disorder, Shared
29790	2979	Paranoid Disorder, Atypical
29830	2983	Paranoid Disorder, Acute
29889	2988	Psychosis, Brief Reactive
29890	2989	Psychosis, Atypical
2990	29900	Autism
300	3009	Neupotic Disorder
3000	30000	Anxiety Disorder
30003	30000	Anxiety/Tension Nos
30017	30016	Compensation Neurosis

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
30030	3003	Obsessive Compulsive Disorder
30040	3004	Dysthymic Disorder (Depressive Neurosis)
30060	3006	Depresonalization Disorder
30070	3007	Hypochodriasis
30071	3007	Somatoform Dis, Atypical
30072	3007	Phamtom Lump
30090	3009	Unsdbc Ment Dis Nonpsycho
30093	3009	Suicide Gesture
301	3019	Personality Disorder
30100	3010	Personality Disorder, Paranoid
3011	30110	Affective Personality Disorder
30140	3014	Personality Disorder, Compulsive
30160	3016	Personality Disorder, Dependent
30170	3017	Personality Disorder, Antisocial
30198	3019	Personality Disorder, Unspecified
30200	3020	Ego-Dystonic Homosexuality
30210	3021	Zoophilia
30220	3022	Pedophilia
30230	3023	Transvestism
30240	3024	Exhibitionism
30260	3026	Gendor Identity Dis Child
3027	30270	Psychosexual Dysfunction
30278	30272	Immence, Psycogenic
30298	3029	Psychosexual Disorder, Unspecified
3039	3030	Alochol Dependence, Other & Unspec
3050	30500	Alochol Abuse
3051	30510	Tobacco Use Disorder
30595	30590	Other, Mixed, Unspec Drug Abuse
306	3069	Physiological Malfunction, Mental Facotr
30600	3060	Psychophysiological Musculoskeletal Dis
30601	3060	Psychophysiological Musculoskeletal Dis
30700	3070	Stuttering
30710	3071	Anorexia Nervosa
30760	3076	Eneuresis, Functional
30770	3077	Encopresis, Functional
3078	30780	Psychalgia
308	3089	Acute Reaction to Strss
30830	3083	Post Traumatic Stress Disorder, Acute
30900	3090	Adjustment Disorder w/Depressed Mood
3092	30929	Adjustment Reaction w/Predom Disturb Oth
30930	3093	Adjustment Dis w/Disturb of Conduct
30940	3094	Adjustment Dis w/Mix Disturb Emotion/Cond
3098	30989	Adjustment Reactions, Other Spec
30990	3099	Adjustment Reaction, w/Atypical Features
31010	3101	Organic Personality Synd
312	3129	Conduct Disorder, Nec
31223	31220	Cond Dis, Socialized, Aggres
31290	3129	Conduct Disorder, Atypical
31300	3130	Overanxious Disorder, Childhood/Adol
31399	3139	Emotional Disturb or Childhood/Adol
31480	31400	Attention Deficit Disorder, Residual Type
31491	3149	Minimal Brain Dysfunction
31510	3151	Developmental Arithmetic Disorder
3153	31531	Developmental Speech/Language Disorder
31591	3159	Delayed Emotional Maturation
31600	316	Psych Fact Affect Phys Cond
31700	317	Mental Retardation, Mild w/o Other Behavior

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
31800	3180	Mental Retardation, Mod w/o Other Behav Sym
31810	3181	Mental Retardation, Severe w/o Other Behav
320	3209	Menigitis, Bacterial Nos
32110	1179	Meningitis, Fungal
32291	3209	Meningitis, Presumed Bacterial
323	3239	Encephalitis/Myelitis
32390	3239	Myelitis, Acute Transverse
32391	3239	Encephalomyelitis
32401	3240	Intracranial Abscess/Empyema
32411	3241	Intraspinal Abscess/Empyema
3251	325	Thrombosis, Cavernous Sinus
3260	326	Late Effect of Myelitis, Acute Transverse
327000	30540	Barb Sim Act Sed/Hyp Intoxication
32701	2920	Barb Sim Act Sed/Hyp Withdrawal
32702	2920	Barb Sim Act Sed/Hyp Withdrawal Delerium
32704	29283	Barb Sim Act Sed/Hyp Amnestic Disorder
32710	30550	Opioid Intoxication
32711	2920	Opioid Withdrawal
32720	30560	Cocaine Intoxication
32730	30570	Amphet Sim Act Sympath Intoxication
32731	29200	Amphet Sim Act Sympath Withdrawal
32732	29281	Amphet Sim Act Sympath Delerium
32735	29211	Amphet Sim Act Sympath Delusional Disorder
32740	30590	PCP/Sim Act Arylcycloh Intoxication
32742	29281	PCP/Sim Act Arylcycloh Delirium
32749	2929	PCP/Sim Act Arylcycloh Mix Organ Ment Dis
32755	29211	Hallucinogen Delusional Disorder
32756	30530	Hallucinogen Hallucinosis
32757	29284	Hallucinogen Affective Disorder
32760	30520	Cannabis Intoxication
32765	29211	Cannabis Delusional Disorder
32790	30590	Intoxication, Subs, Unspec
32791	2920	Withdrawal, Subs, Unspec
32792	29281	Delerium, Subs Unspec
32793	29282	Dementia, Drug Induced, Subs Unspec
32794	29283	Annestic Disorder, Drug Ind, Subs Unspec
32795	29211	Delusional Disorder, Subs, Unspec
32796	29212	Hallucinosis, Drug Induced, Subs, Unspec
32797	29284	Affective Disorder, Drug Ind, Subs Unspec
32798	29289	Personality Disorder, Drug Ind, Subs Unsp
32840	30590	PCP/Sim Act Arylcycloh Abuse, Unspec
32841	30591	PCP/Sim Act Arylcycloh Abuse, Continuous
32842	30592	PCP/Sim Act Arylcycloh Abuse, Episodic
32843	30593	PCP/Sim Act Arylcycloh Abuse, In Remission
3315	3315	Hydrocephalus, Acquired
332	3320	Parkinson's Disease
333	33390	Other Movement Disorders (Extrapyramidal)
33320	3332	Myoclonus, Hereditary
33321	3332	Myoclonus, Toxic-Metablolic
33333	3333	Tics of Organic Origin
334	3349	Spinocerebellar Disease
335	3359	Anterior Horn Cell Disease
33600	3360	Syringomyelia & Syringobulbia
33691	3369	Lesion, Spinal Cord, w/o Vertebral Injury
33700	3370	Carotidynia
33701	3370	Carotid Sinus Syndrome
33791	3379	Dystrophy, Reflex Sympathetic

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
33792	3379	Shoulder-Hand Syndrome
3400	340	Multiple Sclerosis, Acute
3401	340	Multiple Sclerosis, Chronic
342	3429	Hemiplegia
345	3459	Epilepsy
34500	3450	Epilepsy, Generalized, Nonconvulsive
34510	3451	Epilepsy, Generalized, Convulsive
34542	3454	Epilepsy, Complex Partial (Temporal Lobe)
34550	3455	Epilepsy, Partial, Simple
34591	3451	Epilepsy, Generalized Tonic-Clonic
34592	3458	Epilepsy, Focal Onset w/Sec Generalized
346	3469	Headache, Migraine
34621	3462	Headache, Cluster
34820	3482	Benign Intracranial Hypertension
34881	3489	Brain Disease, Acquired
34900	3490	Headache, Lumbar Puncture
350	3509	Trigeminal Nerve Disorder (5th)
35010	3501	Trigeminal Neuralgia
351	3510	Facial Nerve Palsy (7th)
3512	3510	Spasm, Hemifacial
35291	3529	Palsey, Third Cranial Nerve
35292	3529	Palsey, Sixth Cranial Nerve
35301	3530	Rucksack Palsy
35322	3522	Disorder Glossopharyngeal Nerve (9th CN)
35351	3535	Parsonage-Turner Syndrome
354	3545	Mononeuritis, Upper Limb And Multiplex
35420	3542	Lesion of Ulnar Nerve
355	3558	Mononeuritis, Lower Limb
35591	3559	Dysfunction, Nerve, Other
35592	3559	Neuropathy, Other
35593	3559	Peripheral/Spinal Nerve Disorder
35594	3559	Palsy, Posterior Interrosseous Nerve
35595	3559	Nerve Entrapment Syndrome
35596	3559	Palsy, Anterior Interrosseous Nerve
35681	3568	Palsy, Progressive Supranuclear
358	3589	Myoneural Disorder
35800	3580	Myasthenia Gravis, Ocular
3585	3588	Neuromuscular Blockage, Non-Myasthenic
359	3599	Muscular Dystrophy & Other Myophathy
35910	3591	Dystrophy, Muscular Nos
35911	3591	Dystrophy, Muscular, Duchenne's
35912	3591	Dystrophy, Muscular, Becker's
35913	3591	Dystrophy, Muscular, Limb Girdle
35914	3591	Dystrophy, Muscular, Facioscapulohumeral
35981	3598	Myopathy, Glycogen Storage
35982	3598	Myopathy, Lipid's Storage
35983	3598	Myopath, Infectious
35984	3598	Myopathy, Traumatic
3600	36000	Endophthalmitis, Purulent
3602	36020	Degenerative Disorders of Globe
3603	36030	Hypotony of Eye
36083	36089	Loss of Eye, Aftercare
3610	36100	Retinal Detachment W/Retinal Defect
3611	36110	Retinoschisis & Retinal Cysts
3618	36181	Other Forms Retinal Detachmt (Inc Traction)
3620	36201	Diabetic Retinopathy
3621	36210	Other Background Retinopathy/Retin Vas Changes

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
3622	36229	Other Prolif Retinopathy (Non-Diabethic)
3626	36260	Retinal Degeneration, Peripheral
3627	36270	Hereditary Retinal Dystrophies
3628	36289	Other Retinal Disorders
3633	36330	Chorioretinal Scars
3634	36340	Choroidal Degenerations
3635	35350	Hereditary Choroidal Dystrophies
3640	3643	Iridocyclitis
3645	36457	Degerations of Iris & Ciliary Body
3646	36460	Cysts of Iris, Ciliary Body/Ant Chamber
3647	36470	Adhesions/Disrupt of Iris & Ciliary Body
365	3659	Glaucoma
3650	36500	Glaucoma Suspect (Borderline Glaucoma)
3652	36520	Primary Angle-Closure Glaucoma
3654	36541	Glaucoma w/Congen Anomal, Dystroph & Sys
3656	36560	Glaucoma w/Other Ocular Disorder (Second)
366	3669	Cataract
36605	36600	Cataract, Infantile
3661	36610	Cataract, Senile
3662	36620	Cataract, Traumatic
3663	36630	Cataract, Seconary to Ocular Disorders
3665	36650	Post Cataract Opacification
36700	3670	Hyperopia
36723	36720	Astigmatism, Hyperopic
36724	36720	Astigmatism, Mixed
36725	3720	Astigmatism, Myopic
36741	36751	Accommodative Disorder
36791	3679	Refractive Error
3681	36810	Subjective Visual Disturbance
36817	36813	Photophobia
36818	3688	Visual/Perceptual Motor Dysfunction
3685	36859	Color Vision Deficiencies
3690	36900	Profound Visual Impairment (Both Eyes)
3700	37000	Corneal Ulcer
3702	37020	Superficial Keratitis Wo Conjuctivitis
3703	37040	Keratoconjunctivitis
3705	37050	Interstitial & Deep Keratitis
3706	37060	Corneal Neovascularization
3710	37100	Corneal Scars & Opacities
3711	37110	Corneal Pigmentations & Deposits
3712	37120	Corneal Edema
3713	37130	Changes In Corneal Membrane
3714	37140	Corneal Degeneration
3716	37160	Keratoconus
3720	37200	Conjunctivitis, Acute
3721	37210	Conjunctivitis, Chronic
3722	37220	Blepharoconjuctivitis
3724	37240	Pterygium
3727	37274	Conjunctival Vascular Disorders & Cysts
3730	37300	Blepharitis
3731	37311	Hordeolum
3733	37331	Non-Infectious Dermatosis of Eyelid
3740	37400	Entropion
3741	37410	Ectropion
3743	37430	Ptosis, Eyelid
37435	74489	Ptosis of Eyebrow
37436	74489	Deformity, Eyebrow, Acquired

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
37437	74489	Deformity, Eyebrow, Levator
3744	37445	Sensorimotor Disorders of Eyelid
37491	37434	Excess Skin, Orbit, Acquired
375	3759	Lacrimal System Disease
3750	37500	Dacryoadenitis, Unspec
3752	37520	Epiphora
3753	37530	Acute & Unspec Inflam Lacrimal Passages
3755	37553	Stenosis & Insuff of Lacrimal Passages
3760	37600	Acute Inflammation of Orbit
3761	37610	Chronic Inflammatory Disorders of Orbit
3762	37621	Exophthalmos, Endocrine
377	3779	Disorders of Optic Nerve And Visual Pathways
3770	37700	Papilledema (Optic Disc Edema)
3771	37710	Atrophy, Optic
3772	37754	Optic Disc Disorders, Others
3773	37730	Neuritis, Optic
3774	37749	Disorders of Optic Nerve, Other
3775	37754	Disorders of Optic Chiasm
3776	37754	Disorders of Other Visual Path ys
3777	37754	Disorders of Visual Cortex
3780	37800	Esotropia
37809	37883	Convergence Insufficiency
3781	37810	Exotropia
37819	37885	Divergence Insufficiency
37846	37840	Hyperphoria
3785	37850	Strabismus, Paralytic
3786	37860	Strabismus, Mechanical
3787	37873	Strabismus, Other Specified
3788	37887	Binocular Eye Movements Disorders, Other
37891	3789	Strabismus
37895	37884	Convergence Excess
37896	37885	Divergence Excess
37907	0940	Posterior Sclerosis
37908	37900	Episcleritis
3791	37919	Sclera Disorders, Other
3799	37990	Eye and Adnexa Disorder, Unspec
3800	38000	Perichrondritis, Auricle
3801	38023	Otitis Externa
3802	38023	Otitis Externa, Other
3812	38120	Otitis Media, Mucoid
38150	38160	Eustachian Tube Blockage
382	3824	Otitis Media, Supprative & Unspec
3820	38200	Otitis Media, Supprative, Acute
3832	38320	Ostemomastoiditis
38391	3839	Mastoiditis (Coalescent)
3840	38400	Myringitis, Acute w/o Otitis Media
38426	38420	Perforated Tympanic Membrane, Nontraumatic
3851	38510	Otitis Media, Adhesive
3860	38600	Meniere's Syndrome
3863	38630	Labyrinthitis
3864	38640	Fistula, Labyrinthine
3881	38810	Noise Effects of Inner Ear
3883	38830	Tinnitus
3890	38900	Hearing Loss, Conductive
3891	38910	Hearing Loss, Sensorineural
391	3919	Rheumatic Fever w/Heart Involvement
392	3929	Chorea, Sydenham's

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
39701	3970	Rheumatic Heart Disease, Tricuspid Valve
401	4019	Hypertension, Essential
402	40290	Hypertension w/Cariovascular Disease
403	4039	Hypertension w/Renal Dysfunction
405	40599	Hypertension, Secondary
40592	40591	Hypertension, Renovascular
410	4109	Acute Myocardial Infarction
413	4139	Angina Pectoris
414	4149	Heart Disease, Ischemic, Chronic, Other F
41401	4140	Heart Disease, Atherosclerotic, Post Cabg
41402	4140	Arteritis, Coronary Heart Disease
41406	4140	Heart Dis, Atheroscler, Norm LV (EF>40%)
41407	4140	Heart Dis, Atheroscler, ABN, LV (EF>40%)
41408	4140	Heart Dis, Atherosclerotic, Post PTCA
41409	4140	Heart Disease, Atherosclerotic, Unstable
41781	4178	Vasculitis, Pulmonary, Acute, Unspec
4229	42290	Myocarditis, Acute
42401	4240	Mitral Annular Calcification
42402	4240	Mitral Valve Regurgitation
42403	4240	Prolapse, Mitral Valve
42411	4241	Regurgitation, Aortic
42412	4241	Stenosis, Aortic, Valv Heart (Nonrheum)
42414	4241	Endocarditis, Aortic Valve
42415	4241	Stenosis, Aortic
42421	4242	Tricuspid Valve, Regurg (Nonrheumatic)
42422	4242	Tricuspid Valve, Regurgitation, Primary
42423	4242	Tricuspid Valve, Regurgitation, Secondary
42431	4243	Stenosis, Valvular Pulmonic
42432	4243	Endocarditis, Pulmonary Valve
42433	4243	Regurgitation, Pulmonic, Primary
42434	4243	Regurgitation, Pulmonic, Secondary
42491	42490	Endocarditis Nos
425	4254	Cardiomyopathy
4256	4254	Cariomyopathy, Dilated
2620	4262	Left Anterior Fascicular Block, LAFB
42621	4262	Left Posterior Fasterior block, LPFB
42690	4269	Prolonged QT
427	4279	Cardiac Dysrhythmias
42791	4279	Arrhythmia, Cardiac
42792	42789	Tachycardia, Multifocal Atrial
42793	42789	Bradycardia
42801	4280	Heart Failure, Congestive, Second to ASHD
42802	4280	Heart Fail, Congest, Sec to Endocarditis
42891	4289	Heart Failure, Idiopathic
42931	4293	Hypertrophy, Left Ventricular
42990	4299	Cardiac Disease, Unspec
42991	42789	Arrhythmia, Atrial & Ventricular, Other
43210	4321	Hemorrhage, Cereb, Subdur w/o Paralysis
433	4339	Occlusion & Stenosis Precerebral Arteries
434	4349	Occlusion of Cerebral Arteries
435	4359	Transient Cerebral Ischemia
43591	4359	Trans Ischemic Attck w/Neuro Def (Rine)
4361	436	Cerebrovascular Accident (CVA) Left
4362	436	Cerebrovascular Accident (CVA) Right
4363	436	Cerebrovascular Accident, Multiple Lacunar
440	4409	Atherosclerosis
44021	4402	Gangrene, Arteriosclerotic

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
4405	4409	Ischemic Vascular Disease, Generalized
4438	4439	Peripheral Vascular Disease, Extremities
44391	4439	Intermittent Claudication
4442	44422	Arterial Embol/Thrombosis, Arteries Extrem
4443	44489	Arterial Embolism/Thrombosis, Systemic
4448	44489	Arterial Embolism/Thrombosis, Other Spec
446	4460	Polyarteritis Nodosa & Allied Conditions
44601	4462	Vasculitis, Eosinophilic (Churg-Strauss)
44602	4460	Angitis, Necrotizing Sarcoidal
44621	4462	Goodpasture's Syndrome
44651	4465	Arteritis, Temporal
44760	2870	Vasculitis, Cutaneous
44761	4476	Arteritis, Unspec
44782	4478	Hyperlasia, Fibromuscular-Carotid
44783	4478	Vasculitis, Kidney
44784	4478	Dysplasia, Fibromuscular
451	4519	Phlebitis/Thrombophlebitis
4511	45119	Phlebitis, Deep, Lower Extremity
454	4549	Varicose Veins, Lower Extremity
459	4599	Circulatory System Disorders, Other
45901	4590	Drug Extravasation
4601	460	Coryza
4602	460	URI Acute (Cold)
461	4619	Sinusitis, Acute
4631	463	Adenotonsillitis, Acute
4641	46410	Tracheitis, Acute
4642	46420	Acute Laryngitis & Tracheitis
4643	46430	Epiglottitis
466	4660	Bronchitis & Bronchiolitis
471	4719	Polyp, Nasal, (Nasal/Sinus)
472	4722	Pharyngitis & Nasopharyngitis, Chronic
47202	4720	Rhinitis, Sicca
47203	4720	Rhinitis, Medicamentosa
47204	4722	Nasopharyngitis, Purulent, Chronic
473	4739	Sinusitis, Chronic
47380	4739	Drainage, Postnasal
4741	47410	Hypertrophy, Tonsils, Adenoids
47480	4748	Cyst, Tonsil
47481	4748	Tonsillar Tag
477	4779	Rhinitis, Allergic
47780	4720	Rhinitis, Nonspec
47781	4770	Rhinitis, Allergic, Trees
47782	4770	Rhinitis, Allergic, Grass
47783	4770	Rhinitis, Allergic, Weeds
47784	4778	Rhinitis, Allergic, Mold
47785	4778	Rhinitis, Allergic, Pet
47786	4778	Rhinitis, Allergic, Dust
47787	4778	Rhinitis, Allergic, Mites
47788	4779	Rhinitis, Allergic, Seasonal
47789	4779	Rhinitis, Allergic, Perennial
47790	4720	Rhinitis, Non-Allergic w/Eosinophilia
47791	4779	Rhinitis, Vasomotor
47810	4781	Abscess, Nasal Septal
47812	4781	Perforation, Septal
47814	4781	Nasal Disorder, Other
47827	47826	Cyst, Hypopharynx
4783	47830	Paralysis, Vocal Cord

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
47835	47830	Paralysis, Vocal Cord, Iatrogenic
47836	47830	Paralysis, Vocal Cord, Chronic
47878	47879	Obstruction, Laryngeal
480	4809	Pneumonia, Viral
48281	4828	Pneumonia, Mycobacterial-Non-Tuberculosis
491	4919	Bronchitis, Chronic
49181	4918	Bronchiolitis Obliterans
492	4928	Emphysema
493	49390	Asthma
4930	49300	Asthma, Extrinsic
4931	49310	Asthma, Intrinsic
4939	49390	Asthma, Allergic
49392	49390	Asthma, Non-Allergic
49393	39390	Asthma, Episodic/Confining
49394	49390	Asthma, Fully Reversible
49395	49490	Asthma, Partially Reversible
49396	49390	Asthma, Bronchodilator Dep
49397	49390	Asthma, Steriod Dep
49398	39390	Asthma, Exercise Induced
49399	49390	Asthma, Occupational
495	4959	Alveolitis, Allergic, Extrinsic
49521	4952	Pigeon Breeder's Lung
49591	4959	Pneumonitis, Hypersensitivity
4961	496	Impaction, Mucoid, Tracheobroncheal
5011	5119	Effusion, Pleural, Secondary to Asbestos
50781	515	Pneumonitis, Interstitial, Drug Induced
508	5089	Respiratory Cond other Unspec Ext Agents
510	5109	Empyema
511	5110	Pleurisy
5117	5119	Effusion, Pleural, Sec to Pneumoconiosis
51181	5119	Effusion, Pleural, Sec to Malignancy
51182	5119	Effusion, Pulmonary, Sec to Mesothelioma
51183	5119	Effusion, Pleural, Secondary to Fungal
51190	5119	Effusion, Pleural, Unspec
512	5128	Pneumothorax
5150	515	Pneumonitis, Interstitial
5151	5168	Pneumonitis, Interstitial, Desquamative
516	5169	Pneumonopathy, Other Alveolar/Parietoalve
51681	5168	Pneumonitis, Interstitial, Lymphocytic
518	5188	Lung Disease, Other
51880	4954	Aspergillosis, Allergic Bronchopulmonary
51881	5188	Nodule, Pulmonary
51911	5191	Stenosis, Tracheal
51981	5198	Obstruction, Upper Airway
52400	5240	Microgenia
52401	5240	Receding Chin (Congenital)
52410	5241	Retrognathism
52411	5241	Asymmetry of Mandiable
52721	5272	Parotitis, Acute
52722	5272	Parotitis, Chronic
52761	5285	Mucocele, Lip
530	5309	Esophagus Disease
53010	5301	Esophagitis, Infectious
53012	5301	Esophagitis, Caustic
53051	5305	Motor Disorder, Non-Specific (Esophagus)
531	53190	Ulcer, Gastric
5311	53110	Ulcer, Gastric, Acute w/Perforation

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
5314	53140	Ulcer, Gastric, w/Hemorrhage
53142	53140	Ulcer, Stomach, w/Hemorrh Only
5315	53150	Ulcer, Stomach, w/Perfor Only
532	53290	Ulcer, Duodenal
5324	53240	Ulcer, Duodenum (w/Hemorrh Only)
5325	53250	Ulcer, Duodenum (w/Perfor Only)
5329	53290	Duodenal Ulcer w/o Hemorrhage Or Perforat
533	53390	Ulcer, Peptic, Unspec Site
5339	53390	Peptic Ulcer Dis Nos
53501	5350	Gastritis w/Hemorrhage
53561	5353	Duodenitis w/Hemorrhage
53680	5368	Stasis/Retention
53681	5368	Acid Peptic Disease
540	5409	Appendicitis, Acute
550	55090	Hernia, Inguinal
5501	55010	Hernia, Inguinal w/Obstruction w/o Gangre
5509	55090	Hernia, Inguinal w/o Obstruction/Gangrene
55091	55090	Hernia, Inguinal w/o Obstruct Unilateral
5532	55320	Hernia, Ventral
55380	5538	Hernia, Abdominal
555	5559	Enteritis/Ileitis Regional
5561	556	Colitis, Ulcerative
55890	5589	Gastronenteritis
55891	5589	Diarrhea
55892	5589	Colitis, Idiopathic
562	56210	Diverticula of Intestine
5620	56200	Diverticulum, Small Intestine, Nos
564	5649	Digestive Disorder, Functional, Nec
56490	5648	Motility Disorder, Small Bowel
56491	5369	GI Disorder, Unspec
565	5650	Fissure/Fistula, Anal
567	5679	Peritonitis
5688	56881	Hemoperitoneum
569	5699	Intestine Disorders, Other
56948	56949	Proctitis, Nos
5701	570	Hepatic Failure, Acute
571	5719	Chronic Liver Disease & Cirrhosis
5714	57140	Hepatitis, Chronic
57142	0709	Hepatitis, Chronic, Active, Viral
57221	5722	Encephalopathy, Hepatic
57331	5733	Hepatitis, Drug Induced
57332	5733	Hepatitis, Toxic
57391	5739	Dysfunction, Liver, Antibiotic Associated
5740	57400	Cholelithiasis w/Cholecystitis
5742	57420	Cholelithiasis w/o Cholecystitis
5745	57450	Choledocholithiasis w/o Cholecystitis
575	5759	Gall Bladder Disorder, Other
57510	5751	Cholecystitis, Chronic
57610	5761	Cholangitis, Acute
57611	5761	Cholangitis, Chronic Sclerosing
57781	5778	Insufficiency, Pancreatic
57890	5789	Bleeding, Upper GI
57891	5789	Bleeding, Lower GI
57894	5789	Anomaly, Vascular w/Hemorrhage
57895	5789	Bleeding, Occult GI
57896	5789	Bleeding, GI Nos
584	5849	Renal Failure, Acute

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
5861	586	Renal Failure, w/Uremia
589	5899	Kidney, Small, Unknown Cause
5900	59000	Pyelonephritis, Chronic
5901	59010	Pyelonephritis, Acute
59390	5939	Kidney Disease Nos
59392	5939	Renal Disorder, Unspec
59393	59389	Renal Disorder, Obstructive
59394	5939	Renal Insufficiency
595	5959	Cystitis
599	5999	Urethra/Urinary Tract Disorder, Other
59901	5990	Infection, Urinary Tract, Chronic
59951	5995	Urethrocele/Cystocele, Male
5998	5999	GU Disorder
601	5019	Prostatitis
603	6039	Hydrocele
604	60590	Orchitis & Epididymitis
606	6069	Infertility, Male
6078	60789	Disorders, Penis, Other Spec
608	6089	Genital Organ Disorder, Male, Other
60888	60889	Mass, Scrotal
60892	6089	Pain, Testicular
610	6109	Dysplasia, Mammary, Benign
61010	6101	Mastitis (Cystic), Chronic
61011	6101	Fibrocystic Disease, Breast
611	6119	Breast Disorder, Other
61101	6110	Mastitis
61102	6110	Abscess, Breast
61112	6111	Hyperplasia, Breast
61113	6111	Hypertrophy, Breast
61114	6111	Macromastia
6117	61171	Mastodynia
61180	6118	Deformity, Breast
61181	6118	Ptosis, Breast
61191	6118	Implants/Augmentation Breast
6161	61610	Vaginitis/Vulvovaginitis
61612	61610	Vaginitis, Nos
61613	61610	Vulvovaginitis
61614	61610	Vaginitis, Gardnerella
617	6179	Endometriosis
620	6209	Ovary/Fal Tube/Broad Lig Noninflam Disord
62131	6213	Hyperplasia, Endometrial Adenomatous
62132	6213	Hyperplasia, Endometrial Cystic
625	6259	Pain, Pelvic
62591	6259	Pain, Vaginal
626	6269	Menstruation & Other Bleeding Disorder
62601	6260	Amenorrhea, Primary
62602	6260	Amemorrhea, Secondary
62681	6268	Dysfunction, Menstrual
62711	6271	Bleeding, Postmenopausal w/Hormonal Ther
62712	6271	Bleeding, Postmenopausal w/o Hormon Ther
628	6289	Infertility, Female
633	6339	Pregnancy, Ectopic
634	63490	Abortion, Spontaneous
6341	63410	Abortion, Spontaneous, Excessive Hemorrha
635	63590	Voluntary Interruption of Pregnancy
6373	63730	Abortion, Unspec, Comp By Renal Failure
640	64093	Hemorrhage In Early Pregnancy

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
6400	64003	Abortion, Threatened
641	64113	Antepart Hemorr, Abrupt Placent & Place
6410	64103	Placenta Previa w/o Hemorrhage
6411	64113	Hemorrhage From Placenta Previa
6420	64293	Pregnancy Complication, Hypertenison DRB & VA
6424	64243	Pre-Eclampsia, Mild
6425	64253	Pre-Eclampsia, Severe
6430	64303	Hyperemesis Gravidarum
644	64403	Labor, Premature
6441	64413	Labor, False
6442	64420	Early Onset of Delivery
6462	64623	Pregnancy Complication, Renal Disease
6466	64663	Infection, Genitourinary Tract, Pregnancy Related
64661	64763	Pregnancy, Complication, Herpes Genitalis
6467	64673	Pregnancy, Complication, Liver Disorder
64675	64673	Pregnancy, Complication, Hepatitis
6468	64693	Pregnancy, Complication, Other
64681	64893	Pregnancy, Complication, Endocrine Disorder
64682	64893	Pregnancy, Complication, Seizure Disorder
64683	64893	Pregnancy, Complication, Asthma
6469	64693	Pregnancy, Complication, Nos
64695	64893	Dermatosis, Pregnancy
64696	64893	Pregnancy, Complication, Pulmonary Disease
64761	64763	Pregnancy, Complication, Other Viral Disea
6480	64803	Pregnancy, Complication, Diabetes
6482	64823	Pregnancy, Complication, Anemia
6486	64863	Pregnancy, Complication, Cardiovascular Disease
6488	64883	Diabetes, Gestational
64891	64893	Pregnancy, Complication, Systemic Lupus Erythemato
64892	64893	Pregnancy, Complication, Gastrointestinal Disease
6522	65223	Breech Presentation w/o Mention Of Versio
6523	65233	Transverse/Oblique Presentation
6530	65303	Abnormality, Major, Bony Pelvis
6537	65373	Fetal Abnormality Causing Disproportion
6542	65423	Cesarean Section, Previous
6545	65453	Incompetent Cervix
655	65583	Fetal Abnormality, Known/Suspected
6553	65530	Fetal Damage Suspected FM Viral Disease I
6561	65613	Isoimmunization, RH
6562	65623	Isoimmunization, Other
6564	65643	Fetal Death In Utero
65655	65653	Intrauterine Growth Retardation
6566	65663	Fetal Growth, Excessive
657	65703	Polyhydramnios/Hydramnios
6580	65803	Oligohydramnious
6581	65813	Premature Rupture of Membranes
6662	66624	Delayed & Secondary, Postpartum Hemorrhage
66882	66884	Anesthesia Complicatn, Delivery w/Postpart
6712	67123	Thrombophlebitis, Superficial, Preg/Puerp
6732	67324	Pregnancy, Complication, Thromboembolism
674	67494	Complications of Puerperium
6741	67414	Disruption, Cesarean Wound
6743	67434	Complication, OB Surgical Wounds, Other
675	67594	Breast & Nipple Infections Assoc w/Childbirth
6752	67524	Mastitis, Nonpurulent
676	67634	Breast Disorder, Other
68091	6829	Abscess, Pyoderma

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
68092	6809	Boil/Carbuncle/Furuncle
68093	6809	Furuncle (May Want to Combine With 6809)
681	6819	Cellulitis/Abscess, Finger/Toe
6810	68100	Cellulitis, Finger
6811	68110	Cellulitis, Toe
68112	68111	Paronychia Toe
682	6829	Cellulitis/Abscess
68291	6829	Abscess
6854	7854	Necrosis, Skin
68611	6861	Granuloma, Nos
691	6918	Dermatitis, Atopic
692	6929	Dermatitis, Contact, Nos
6927	69270	Dermatitis, Contact, Solar Radiation
69272	69279	Photosensitive Diseases, Photoallergic
69273	69279	Photosensitive Diseases, Phototoxic
69274	69279	Photosensitive Diseases, Polymorphous Light
69282	69289	Sensitivity, Dyes, Preservatives & Additives
69291	6929	Dermatitis, Contact, Allergic
69292	6929	Dermatitis, Nos
69293	6929	Eczema (Nummular)
69294	6929	Dermatitis, Contact, Unspec Cause
69295	6929	Dermatitis, Contact, Vulva
69530	6953	Rosacea/Perioral Dermatitis
69531	6953	Rhiophyma
69540	6954	Lupus Erythematosus, Discoid
69541	6954	Lupus Erythematosus, Subacute
69587	69589	Granuloma, Annulare
6959	69589	Dermatitis, Exfoliative
696	6961	Psoriasis, Nos
698	6989	Pruritus & Related Conditions
69830	6983	Lichen Simplex, Chronicus
69831	6983	Neurodermatitis, Local
70101	7010	Lichen Sclerosus Et Atrophicus
70102	7010	Morphea
70103	7010	Scleroderma, Linear
70141	7014	Scar, Hypertrophic
70180	7018	Aging Face, Dermatochalasis
70181	7018	Cutis Laxa, Senilis
70182	7018	Elastosis Senilis
70183	7018	Rhytidosis Facialis
70184	7018	Cutis Laxa Abdomen
70185	7018	Rhytidosis, Perioral
70190	7019	Flacid Atrophy, Congenital, Face
70191	7019	Flacid Atrophy, Acquired, Face
70192	7019	Excess or Redundant Skin, Extremities
7020	702	Keratosis, Seborrheic
7021	7011	Keratosis, Other
703	7039	Nail Disease Nec
70381	7038	Onychauxis
704	7038	Hair/Hair Follicle Disease
7040	70400	Alopecia
70480	7048	Folliculitis
70481	7048	Pseudofolliculitis Barbae
70490	7011	Keratosis Pilaris
705	7059	Sweat Gland Disorder
7058	70589	Sweat Gland Disorder, Other
70610	7061	Cyst, Acne

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
70621	7062	Cyst, Pilar
70622	7062	Cyst, Sebaceous
70623	7062	Torre Syndrome (Mult Sebaceous Tumor)
70624	7062	Cyst, Mucous
70625	7062	Cyst, Epidermal, Incl Milia
7065	7062	Cyst
7072	7071	Ulceration of Foot, Diabetic Associated
7073	7071	Ulceration of Toe, Diabetic Associated
708	7089	Urticaria
70881	7085	Urticaria, Cholinergic
70882	7088	Urticaria, Recurrent
70883	7088	Urticaria, Acute
70884	7088	Urticaria, Chronic
70885	7088	Urticaria, Physical
70886	7088	Urticaria, Infectious
709	7099	Skin/Subcutaneous Tissue Disorder, Other
70901	7090	Chloasma (Melasma)
70902	7090	Lentigo
70903	7090	Pigmentation, Hyper
70904	7090	Pigmentation, Hypo
70905	7090	Tattoo
70906	7090	Vitiligo
70921	7092	Scar, Adherent
70922	7092	Scar, Atrophic
70923	7092	Capsular Scarring, Capsular (Post-Augmentation)
70924	7092	Scar, Contracted
70925	7092	Scar, Painful
70926	7092	Scar, Face, Nos
70927	7092	Deformity, Facial, Cosmetic, Acne
70981	7098	Chapped Skin
70991	7099	Lymphocytoma Cutis
710	7109	Connective Tissue Disease, Diffuse
71012	7101	Scleroderma, Crest
71091	7108	MCTD/Overlap Syndromes
7110	71100	Arthritis, Septic
7115	0799	Arthritis, Viral
7116	1179	Arthritis, Fungal
7119	71190	Arthritis, Infectious, Unspec
7122	2754	Pseudogout
7128	71280	Arthropathy, Hydroxyapetite
7131	5699	Arthritis, Enteropathic
71321	2827	Arthropathy, Hemoglobinopathy
71322	2860	Arthropathy, Hemophilia
71323	28260	Arthropathy, Sickle Cell
7143	71430	Polyarthritis, Chronic, Juvenile
71434	71430	Arthritis, Juvenile Rheumatoid, Adult
7159	71590	Osteoarthrosis, Unspec
71593	7213	Osteoarthrosis, Thoracic, Lumbar Spine
71594	71592	Osteoarthritis, Elbow
71599	71598	Arthrosis, Basal Joint
7161	71610	Arthritis, Traumatic
7165	71650	Arthritis, Polarticular, Unspec
7166	71660	Arthritis, Monoarticular, Unspec
7169	71690	Arthropathy, Unspec
717	7179	Derangement, Internal Knee
7178	71789	Derangement, Internal Knee, Other
7181	71810	Joint, Loose Body

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
7184	71840	Contracture, Joint
71876	71886	Instability, Knee, Chronic
7189	71890	Derangement, Joint, Unspec
7190	71900	Hydrarthrosis
71902	71901	Effusion Joint, Shoulder
7191	71910	Hemarthrosis
7192	71920	Synovitis, Villonodular
7194	71940	Arthralgia
71948	71945	Pain, Joint, Back
7195	71950	Joint Stiffness
7199	71990	Joint Disorder
720	7209	Spondylitis, Inflammatory, Unspec
72101	7210	Spondylosis, Cervical w/o Myelopathy
72131	7213	Spondylosis, Lumbosacral
7219	72190	Spondylosis, Unspec Site
72201	7220	Herniated Nucleus Pulposus, C4-5
72202	7220	Herniated Nucleus Pulposus, C5-6
72203	7220	Herniated Nucleus Pulposus, C6-7
72204	7220	Herniated Nucleus Pulposus, Other
72212	72210	Displacement, Lumbar/Sacral Disc
72213	72210	Herniated Nucleus Pulposus, L3-4
72214	72210	Herniated Nucleus Pulposus, L4-5
72215	72210	Herniated Nucleus Pulposus, L5-s1
72216	72210	Herniated Nucleus Pulposus, Other Lumbar
72217	7222	Herniated Nucleus Pulposus, Recurrent
7225	72252	Lumbodorsal Disc Degeneration
72341	7234	Radiculopathy, C5
72342	7234	Radiculopathy, C6
72343	7234	Radiculopathy, C7
72344	7234	Radiculopathy, Other Cervicothoracic
72381	7238	Cervical Facet Syndrome
724	7249	Back Disorder, Other & Unspec
7240	72400	Stenosis, Spinal, Other Than Cervical
72403	72400	Lateral Recess Syndrome
72411	7241	Pain In thoracic Spine
72421	7242	Pain, Low Back w/o Radiating Symptoms
72422	7242	Pain, Low Back w/Radiating Symptoms
72423	7242	Pain, Low Back
72441	7244	Radiculitis, Thoracic
72442	7244	Radiculopathy, L4
72443	7244	Radiculppathy, L5
72444	7244	Radiculopathy, S1
72445	7244	Radiculopathy, Other L-S
72461	7246	Sacroliliac Dysfunction
726	72690	Peripheral Enthesopath & Allied Syndromes
7261	72610	Rotator Cuff Syndrome
7263	72630	Enthesopathy, Elbow Region
72641	7264	Bursitis, Hand or Wrist
72668	72669	Iliotibial Band Syndrome
7267	72670	Enthesopathy, Ankle & Tarsus
7269	72690	Enthesopathy, Unspec
72692	72690	Tendinitis
72693	72612	Tendinitis, Bicipital
727	72709	Synovium/Tendon/Bursa Disorder, Other
7270	72700	Synovitis/Tenosynovitis
72707	72700	Tenosynovitis
72708	72709	Synovitis/Tenosynovitis, Elbow

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
72710	7271	Bunion, 1st Metatarsal
72711	7271	bunion, 5th Metatarsal
7274	7062	Cyst, Myxioid Cobine with Mucous Cyst
7276	72760	Rupture of Tendon, Nontraumatic
7281	72819	Myositis Ossificans
72851	7285	Subluxing/Hypermobile Shoulder
7287	72879	Fibromatoses, Other
72886	72889	Overuse Syndrome (Soft tissue), Lower Leg
72891	84212	Injury, Gamekeepers, Thumb
729	7299	Soft Tissue Disorder, Other
72961	7296	Retained Hardware, Knee
7298	7295	Pain, Extremity (Not Joint)
72983	72989	Upper Extremity Disorder
72984	72989	Lower Extremity Disorder
72991	7299	Musculoskeletal Syndromes Assoc w/Malignancy
72992	7299	Soft Tissue Disorders
7300	73000	Ostemomyelitis, Acute
7301	73010	Ostemoyelitis, Chronic
7302	73020	Osteomelitis Nos
73220	7322	Epiphysis, Upper Femoral Slipped
73276	7327	Osteochondritis Dissecans, Knee
73277	7327	Osteochondritis Dissecans, Ankle
7330	73000	Osteoporosis
73311	7331	Fracture, Pathologic, Femoral Shaft
73312	7331	Fracture, Hip, Stress
73313	7331	Fracture, Foot, Stress
73314	7331	Fracture, Leg, Stress
73315	7331	Stress Fracture, Boot Top
73316	7331	Stress Fracture, Public Rami
73317	7331	Stress Fracture, Femur, Mid-Shaft
73318	7331	Stress Fracture, Femur, Distal
7332	73320	Bone Cyst
73383	73382	Delayed Union, Lower Leg
73384	73382	Pseudoarthrosis
7339	73390	Bone/Cartilage Disorder, Other & Unspec
73392	7177	Chondromalcia, Knee
73393	73390	Osteopenia
73397	73399	Costochondritis
73398	73399	Sesamoiditis
7367	73679	Deformity, Ankle/Foot, Acquired, Other
73678	73679	Podiatric Conditions
73691	7369	Deformity, Epiphyseal
73696	7366	Deformity, Rotational Knee
73697	73689	Deformity, Rotational Lower Leg
737	7379	Curvature of Spine
7371	73710	Kyphosis, Acquired
73728	73729	Hyperlordosis
7373	73730	Scoliosis/Kyphoscoliosis
73802	7380	Deformity, Nose, Developmental
73811	7381	Deformity, Face, Acquired
73812	5285	Deformity, Lip, Acquired
73841	7384	Spondylolisthesis, Degen
73842	7384	Spondylolisthesis w/o Lysis
73881	7366	Deformity, Angular Knee
739	7399	Lesion, Nonallopathic, Nec
7410	74100	Spina Bifida w/Hydrocephalus
7419	74190	Spina Bifida w/o Hydroscephalus

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
74191	74190	Meningomyelocele
7425	74259	Anomaly, Spinal Cord, Other Spec
74255	74259	Tethered Cord
74258	74259	Myelodysplasia
74291	74190	Anomalies, Nervous System, Congenital
74292	7429	Anomaly, Brain, Congenital Nos
7434	74349	Congenital Anomalies of Anterior Segment
7436	74369	Congenital Anom, Eyelids/Lacrim Sys/Orbit
74408	3888	Atresia, Aural, Acquired
74428	74429	Protruding Ears, Congenital
74488	74489	Anomalies, Maxillofacial, Nec
74491	7449	Deformity, Face, Congenital, Nos
745	74519	Anomalies, Bulbus Cordis & Cardiac Septal
7456	74560	Defect, Endocardial Cushion
74652	7466	Prolapse, Mitral Valve W/Regurgitation
7471	74710	Coarctation of Aorta
7478	74789	Anomaly, Circ Sys, Cong, Other Spec
74780	74789	Aneurysm, Multiple
74782	74781	Aneurysm, Anterior Comm Art
74783	74781	Aneurysm, Posterior Comm Art
74784	74781	Aneurysm, Mid Cerebral Art
74785	74781	Aneurysm, Ant Cerebral Art
74786	74781	Aneurysm, Other ICA
74787	74781	Aneurysm, Basilar Tip
74788	74789	Aneurysm, Other Post Circ
7479	7476	Malformation, Arteriovenous
7490	74900	Cleft Palate
7491	74910	Cleft Lip
7492	74920	Cleft Palate/Lip
7501	75010	Anomalies, Tongue, Other
75091	7509	Anomalies, Oropharyngeal, Nos
75092	7509	Deformity, Lip, Congenital, Nos
75243	75240	Anomaly, Cervix, Congenital
75249	7529	Anomaly, Genitalia Female, Congen, Nos
75291	7529	Anomalies, Genitalia, Male, Congen, Nos
753	7539	Anomalies, Urinary System, Congenital
75311	7531	Polycystic Kidney Disease
75361	7536	Atresia, Congenital, Bladder & Neck
75362	7536	Atresia, Congenital, Urethra
75391	7539	Anomalies, Kidney, Congenital, Nos
7543	75430	Dislocation, Hip, Congenital
75436	75432	Subluxation, Hip, Congenital
7545	75459	Varus Deformity of Foot
7546	75469	Valgus Deformity of Foot
75478	75479	Equinus
7556	75569	Anomalies, Lower Limb
75568	75565	Dislocation, Patella, Congenital
75570	75567	Tarsal Coalitions
756	7569	Anomalies, Musculosketel, Other Congent
75601	7560	Pseudo Hypertelorism
75602	7560	Hypertelorism
7561	75610	Anomalies, Spine
75618	75612	Spondylolisthesis w/Lysis
75671	7567	Anomalies of Skull/Face Bones
75736	75739	Prokeratosis
75737	75739	Hailey-Hailey Disease
75738	75739	Darier's Disease

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
75761	7576	Hypolasia, Breast
75791	7579	Nevus (Not Nevocellular), Nos
758	7589	Anomalies, Chromosomal
75921	7592	Lingual Thyroid
75980	7598	Marfan's Syndrome
75981	7598	Defect, Biochemical, Hereditary
76510	7651	Prematurity (Secondary Visual Condition)
76511	7651	Prematurity
778	7789	Integumnt & Temp Reg Cond-Fetus/Newborn
77841	7784	Fever, < Mos of Age
78020	7802	Vasovagal Syncope
78031	7803	Convulsion, Febrile
78042	7804	Vertigo
7805	78050	Sleep Disturbance
78092	7809	Pain, Chronic
78094	7809	Amnesia, Transient Global
78095	7809	Amnesia, Nos
78096	7809	Pain, Secondary to Malignancy
781	7819	Nervous/Musculoskeletal System Symptom
78131	7813	Handwriting Problem
78191	7819	Deficit, Sensory, Nec
78192	7819	Neurological Disorder Nec
78193	7819	Neurologic Symptoms, Ill Defined
78194	7819	Deficit, Cortical, Nos
782	7829	Skin Symptoms
78201	7820	Paresthesia
78202	7820	Hyperesthesia
78341	7834	Failure to Grow/Thrive
78342	7834	Short Stature
78401	7840	Headache, Musculoskeletal
78403	7840	Headache, Post-Traumatic
78421	7842	Mass, Neck, Cystic
78422	7842	Mass, Neck, Nos
78431	7843	Aphasia, Broca's
78432	7843	Aphasia, Wernicke's
78433	7843	Aphasia, Conduction
78434	7843	Aphasia, Global
78435	7843	Aphasia, Nos
78436	7843	Mutism
7844	78440	Voice Disorder Nec
78442	78449	Resonatory Problem
78447	78449	Dysphonia
78448	78449	Hoarseness
78451	7845	Dysarthria
78452	7845	Rate Problems
78453	7845	Articulation Disorder
78454	7845	Foreign Accent
78455	7845	Depressed Language Skills
78456	7845	Deaf Speech
78457	7845	Dysphasia
78457	78461	Dyslexia
78468	78469	Apraxia
78491	7849	Tongue Thrusting
78540	7854	Gangrene, Dry, Non-Diabetic
78541	7854	Gangrene, Dry, Diabetic
78542	7854	Gangrene, Moist, Non-Diabetic
78543	7854	Gangrene, Moist, Diabetic

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
78561	7856	Lymphadenopathy, Cervical
78562	7856	Lymphadenopathy, Inguinal
786	7869	Respiratory System & Other Chest Symptoms
7860	78600	Dyspnea
78604	78609	Wheeze
78631	7863	Hemorrhage, Pulmonary
7865	78650	Pain, Chest
78653	78651	Precordial Catch
788	7889	Urinary System Symptoms
78801	7880	Ureteral Colic
78831	7883	Enuresis
78832	7883	Incontinence, Stress, Male
7886	7881	Difficulty Voiding
789	7899	Abdomen/Pelvis Symptoms
78901	7890	Colic, Infantile
78931	7893	Mass, Adnexal
78932	7893	Mass, Pelvic
79060	7906	Hyperglycemia
79061	7906	Hyperuricemia
79191	7919	Urine Test, Sediment Abnormality
79551	V011	Tuberculosis Contact
796	7964	Clinical Findings, Abnormal, Non-Spec
79901	7990	Hypoxemia
7995	7955	Tuberculin Skin Test, Positive
7998	7589	Chromosomal Disorder
79981	7800	Drowsiness
79982	797	Confusion
79983	7807	Weakness
79990	7999	DX/Cond Defer Axis I/II
800	80000	Fracture, Skull Vault
8000	80000	Fracture, Skull, Vault w/o Intracran Inj
801	80100	Fracture, Skull Base
8010	80100	Fracture, Skull, Base w/o Intracran Inj
802	80100	Fracture, Facial Bones
8022	80220	Fracture, Mandiable
80241	8024	FRacture, Malar Bone
80242	8024	Fracture, Zygoma
80281	8028	Fracture, Orbit
8030	80300	Fracture, Skull Nos
8050	80500	Fract, Vert Col w/o Spine CD Inj Cer (Closed)
8060	80600	Fract, Vert Col w/Spin Code Inj Cerv (Closed)
8062	80620	Fract, Vert Col w/Spin Code Inj Thor (Closed)
8070	80700	Fracture, Ribs, Chest Thrauma (Closed)
808	8088	Fracture, Pelvis
8100	81000	Fracture, Clavicle (Closed)
8101	81010	Fracture, Clavicle (Open)
8110	81100	Fracture, Scapula (Closed)
8111	81110	Fracture, Scapula, (Open)
8124	81240	Fracture, Humerus, Lower (Closed)
8130	81300	Fracture, Radius/Ulna, Upper End (Closed)
8134	81340	Fracture, Radius, Distal Third (Closed)
8140	81400	Fracture, Carpal Bones, (Closed)
8160	81600	Fracture, One or More Phalanges of Hand
820	8209	Fracture, Femoral Neck
8210	82100	Fracture, Femur (Closed)
82102	82101	Fract, Femoral Shaft, Proximal (Closed)
82103	82101	Fracture, Femoral Shaft, Mid, (Closed)

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
81104	82101	Fract, Femoral Shaft, Comminuted (Closed)
8212	82120	Fracture, Femur, Lower End, Closed
8215	82100	Fracture, Femur, Unspec
8230	82300	Fracture, Tibial Spine (Closed)
8234	82381	Fracture, Sesamoid, Fibular
8235	82380	Fracture, Sesamoid, Tibial
82361	82390	Fracture, Tibia/Fibula Unspec
8238	82380	Fracture, Lower Leg, Nos (Closed)
825	82520	Fracture, One/More Tarsal & Metatarsal
82526	82526	Fracture, Trans-Talus Dome
82527	82525	Jones-Styloid FX 5th Met
829	8290	Fracture, Nos (Closed)
830	8300	Dislocation, Jaw
831	83100	Dislocation, Shoulder
832	83200	Dislocation, Elbow
833	83300	Dislocation, Wrist
834	83400	Dislocation, Finger
835	83500	Dislocation, Hip
836	83650	Dislocation, Knee
83621	8362	Tear Ligament, Ant Cruciate
83622	8362	Tear Ligament, Post Cruciate
839	8398	Dislocation, Site, Nos (Closed)
8390	83900	Dislocation, Cervical, (Closed)
8392	83920	Dislocation, Thoracolumbar, (Closed)
83981	8398	Dislocation, Arm
84091	8409	Strain, Upper Arm
84092	8409	Strain/Overuse, Shoulder
84191	8419	Strain, Forearm
8420	84200	Sprain, Wrist
8421	84210	Sprain, Hand
84392	8439	Strain, Hip
84393	8439	Strain, Thigh
8444	8448	Shin Splints
84491	8449	Strain, Lower Leg
84492	8449	Sprain, Knee
845	84500	Sprain/Strain, Ankle/Foot
8450	84500	Sprain/Strain, Ankle
8451	84510	Sprain/Strain, Foot
848	8489	Sprain/Strain, Site Nos
8487	8489	Laceration, Tendon
84891	8489	Sprain/Strain, Joint (Ligaments)
84892	8489	Sprain/Strain, Muscles & Tendons
850	8509	Concussion, Acute, Nos
8506	8500	Concussion, Cerebral
851	85180	Cerebral Contusion/Laceration
8518	85180	Laceratn & Contusn, Cerebral w/o IC Wound
8520	85200	Hemorrhage Follow Inj, Subarachnoid, Closed
8522	85220	Hemorrhage Follow Inj, Subdural (Hematoma)
8524	85240	Hemorrhage Follow Inj, Epidural (Hematoma)
8526	85220	Hematoma, Subdural
8527	85240	Hematoma, Epidural
8530	85300	Hematoma, Intracranial Follow Inj (Closed)
8532	85300	Hematoma, Intracerebral
854	85400	Intracranial Injury, Unspec
8540	85400	Injury, Intracranial, Closed
8541	85410	Injury, Head (Open)
8542	85410	Craniocerebral Gunshot Wound

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
8543	85400	Head Trauma (Closed)
860	8604	Pneumothoraz/Hemothorax, Traumatic, Nos
8650	86500	Injury, Spleen w/o Open Wound Into Cavity
869	8690	Multiple Trauma, Extreme, Internal
8720	87200	Wound, Open, External Ear w/o complication
87203	87201	Amputation, Auricular
8721	87210	Wound, Open, External Ear, Complicated
8732	87320	Laceration, Nose
876	8760	Open Wound of Back
87981	8798	Laceration, Simple (<2 Inch)
87982	8798	Laceration, Simple (>2 Inch)
87987	8798	Wound, Puncture
87988	8798	Wound, Stab
87989	8798	Wound, Gunshot
87991	8799	Amputation, Traumatic, Open Wound
87995	8798	Bite, Animal
8800	88009	Wound, Open, Shoulder/Upper Arm w/o Comp
881	88100	Wound, Open, Elbow/Forearm/Wrist
8810	88100	Wound, Open, Elbow/Forearm/Wrist w/o Comp
882	8820	Wound, Open, Hand, Except Finger(s) Alone
8835	8830	Injury, Soft Tissue, Fingernail
885	8850	Amputation, Thumb, Traumatic
886	8860	Amputation Finger(s) Traumatic
8878	8870	Amuputation, Hand, Traumatic
8879	8874	Amputation, Arm, Traumatic
890	8900	Wound, Open, Hip/Thigh
900	9009	Injury, Blood Vessels, Head/Neck
9000	90000	Injury, Carotid Artery
90033	7999	Other Unk Cause Morbidity/Mortality
9044	90440	Injury, Popliteal Blood Vessels
910	9108	Injury, Superficial, Face/Neck/Scalp
911	9118	Injury, Superficial, Trunk
91181	9118	Superficial Injury, Perineum
913	9139	Injury, Superficial, Elbow/Forearm/Wrist
914	9148	Injury, Superficial, Hand, Except Finger
916	9168	Injury, Superficial, Hip, Thigh, Leg, Ank
9169	8798	Bite, Non-Venomous Snake
917	9178	Injury, Superficial, Foot & Toe(s)
918	9189	Superficial Injury, Eye & Adnexa
91811	9181	Abrasion, Corneal
919	9198	Inj, Superficial (Inc Abrasion, Blister)
9200	920	Hemtoma, Nasal Septal
921	9219	Contusion Of Eye And Adnexa
92241	9224	Contusion, Vulva
923	9239	Contusion, Upper Limb
9231	92310	Contusion, Elbow/Forearm
9232	92320	Contusion, Upper Limb, Wrist/Hand
924	9249	Contusion, Lower Limb & Unspec Sites
9242	92420	Contusion, Ankle & Foot, Excluding Toe(s)
930	9309	Foreign Body, Eye, External
940	9409	Burn Confined to Eye & Adnexa
9440	94408	Burn, Wrist/Hands, Unspec Degree
945	94500	Burn, Lower Limb
949	9490	Burn, Nos
9496	9490	Burn, Chemical
94971	94800	Burn, Thermal, <5% Body Surface
94972	94810	Burn, Thermal, 6-15% Body Surface

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
94973	94810	Burn, Thermal, 16% Or More Body Surface
950	9509	Injury To Optic Nerve & Pathways
951	9518	Injury to Other Cranial Nerves (Exc II)
95101	9519	Inj, Cranial Nerve(s) 3-12 (Noniatrogenic)
952	9529	Injury, Spinal Cord, w/o Bone Injury
953	9539	Injury, Nerve Roots & Spinal Plexus
95340	9534	Injury, Brachial Plexus, Traumatic
95341	9534	Injury, Brachial Plexus, Other
955	9559	Injury, Peripheral Nerve(s) Upper Extrem
956	9569	Injury, Peripheral Nerve(s) Lower Extrem
95790	3449	Paralysis, Traumatic Nos
95791	9579	Injury, Peripheral Nerve
95792	9579	Repair, Peripheral Nerve
95880	9588	Compartment Syndrome, Nos
95881	9588	Compartment Syndrome, Acute
95882	9588	Compartment Syndrome, Chronic
959	9599	Injury, Other, Unspec
95900	9590	Trauma, Nose
95901	9590	Trauma, Neck w/Organ Involvement
95902	9590	Trauma, Neck w/o Organ Involvement
95905	47830	Inj, Traumatic/Acute Vocal Cord Paralysis
95906	9590	Trauma, Ear
95971	9597	Injury/Pain, Knee, Nos
95990	9599	Sexual Assault
95991	9599	Suicide Attempt
95992	9599	Injury, Traumatic, Nos
95994	9598	Injury, Other Bone & Joint
977	9779	Overdose, Medicine, Accidental/Deliberate
9775	9779	Ingestion, Accidental
9776	9779	Overdose, Suicide Attempt
980	9809	Toxic Effect, Alcohol
982	9828	Toxic Effect, Solvents Nonpetroleum Based
983	9831	Toxic Eff, Aromatics/Acids/Caustic Alkali
98391	9831	Ingestions, Caustic/Acid
984	9849	Toxic Effect, Lead
987	9879	Toxic Effect, Other Gases, Fumes & Vapors
9880	6931	Allergy, Food, Fish & Shellfish
9889	6931	Allergy, Food, Unspec
989	9899	Toxic Effect, Chemicals Nec
98951	9895	Allergy, Fireant
98952	9895	Hymenoptera Hypersensitivity
98954	9194	Insect Bite/Sting
99002	990	Effects of Radiation, Unspecified
993	9939	Effects of Air Pressure
99501	99550	Anaphylaxis, Exercise
99502	9950	Anaphylaxis, Miscellaneous
99521	9952	Drug Hypersensitivity, Aspirin
99522	9952	Drug Hypersensitivity, Sulfite
99523	9952	Drug Hypersensitivity, Penicillin
99524	9952	Drug Hypersensitivity, Radiocontrast Media
99525	9952	Drug Hypersensitivity, Insulin
99582	99581	Parent/Other Adult Abuse/Neglect
99604	99602	Malfunction, Prosthetic Valve, Aortic
99605	99602	Malfunction, Prosthetic Valve, Mitral
99606	99602	Malfunction, Prosthetic Valve, Pulmonic
99607	99602	Malfunction, Prosthetic Valve, Tricuspid
99621	9962	Shunt Malfunction

APPENDIX L: AMBULATORY CARE DATA BASE (ACDB)EXTENDED DIAGNOSIS CODES WITH CONVERSIONS TO ICD-9-CM (cont'd):

EXTCD	ICD-9-CM	DESCRIPTION
99641	9964	Pseudarthrosis/Broken Rods
99661	9966	Shunt Infection
99681	9968	Complication, Renal Transplant
997	9979	Complication, Affecting Body System, Nec
9977	9999	Complication, Medical
998	9989	Complicaiton, Surgical Procedure
9982	9973	Pneumothorax, Iatrogenic
99891	9999	Complication, Hemodialysis
99892	9999	Complication, Peritoneal Dialysis
999	9999	Complication, Medical Care
99901	9999	Complication, Vaccination, Nos

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